

# VSP 516S



## User Manual

( This User Manual applies to VSP 516 and VSP 516S! )

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# VSP 516S-User Manual

Thank you for choosing our products!

In order to allow you to learn how to use the video processor quickly, we bring you the detailed user manual. You can read the introduction and directions before using the video processor, please read all the information we provide carefully to use our products correctly.

## **Notice**

We provide this manual “as is” without warranty of any kind, no matter expressed or implied, including but not limited to the implied warranties or merchantability and fitness for a particular purpose. We may make improvements or changes to the products and the programs described in this publication at any time without notice.

This publication would contain technical inaccuracies or typographical errors. Changes are periodically made to the information in this publication; these changes are incorporated in new editions of this publication.

## **Federal Communications Commission (FCC) Statement**

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and radiates radio frequency energy and, if not installed or used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference.

## **Guarantee and Compensation**

We provide a guarantee related to perfect manufacturing as part of the legally stipulated terms of guarantee. On receipt, the purchaser must immediately inspect all delivered goods for damage incurred during transportation, as well as for material and manufacturing faults. Please complain to us by written notice.

The period of guarantee begins from the date of transfer of risks, in the case of special systems and software on the date of commissioning, at latest 30 days after the transfer of risks. In the event of justified notice of compliant, we can repair the fault or provide a replacement at its own discretion within an appropriate period. If this measure proves to be impossible or unsuccessful, the purchaser can demand a reduction in the purchase price or cancellation of the contract. All other claims, in particular those relating to compensation for direct or indirect damage, and also damage attributed to the operation of software as well as to other service provided by us, being a component of the system or independent service, will be deemed invalid provided the damage is not proven to be attributed to the absence of properties guaranteed in writing or due to the intent or gross negligence or part of our company.

If the purchaser or a third party carries out modifications or repairs on goods delivered by our company, or if the goods are handled incorrectly, in particular if the systems are commissioned operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not included in the guarantee coverage are system failures which are attributed to programs or special electronic circuitry provided by the purchaser, e.g. interfaces. Normal wear as well as normal maintenance are not subject to the guarantee provided by us either.

The environmental conditions as well as the servicing and maintenance regulations specified in this manual must be complied with the customer.

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# Operators Safety Summary

The general safety information in this summary is for operating personnel.

## **Do Not Remove Covers or Panels**

There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

## **Power Source**

This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

## **Grounding the Product**

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

## **Use the Proper Power Cord**

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

## **Use the Proper Fuse**

To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

## **Do Not Operate in Explosive Atmospheres**

To avoid explosion, do not operate this product in an explosive atmosphere.

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## Terms in This Manual and Equipment Marking



### **WARNING**

Highlight an operating procedure, practice, condition, statement, etc, which, if not strictly observed, could result in injury or death of personnel.

#### **Note**

Highlights an essential operating procedure, condition or statement.
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### **CAUTION**

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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## Amendment Records

The table below lists the changes to the Video Processor User Manual.

Format	Time	ECO#	Description	Principal
V1.0	2013-08-01	0000#	Release	Vira
V1.1	2014-06-04	0001#	1. Update the test pattern description in "Menu Orientation".	Vira
V1.2	2014-09-11	0002#	1. Update the menu tree. 2. Update the "Software Upgrade".	Vira

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# 1. Brief Introduction

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This chapter is designed to introduce you to the VSP 516S User Manual.  
Areas to be covered are:

- Chapter Structure
- How to Use The Manual
- Terms and Definitions
- System Overview
- Application Questions

# 1. Brief Introduction

## Chapter Structure

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## Chapter Structure

The following chapters provide instructions for all aspects of VSP 516S operations.

Chapter 1 [Brief Introduction](#)

Chapter 2 [Hardware Orientation](#)

Chapter 3 [Hardware Installation](#)

Chapter 4 [Menu Orientation](#)

Chapter 5 [Communication Software Guideline](#)

Chapter 6 [System Setup and Operations](#)

Chapter 7 [Common Questions and Solution](#)

Appendix A [Specification](#)

Appendix B [Software Upgrade](#)

# 1. Brief Introduction

How to Use The Manual

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## How to Use the Manual

Followings are important tips for streamlining your use of this User Manual in its electronic “PDF” form.

### Navigation

Use Acrobat Reader’s “bookmarks” to navigate to the desired location. All chapter files have the same bookmark structure for instant navigation to any section. Please note:



- Extensive hyperlinks are provided within the chapters.
- Use Acrobat’s “**Go to Previous View**” and “**Return to next View**” buttons to trace your complete navigational path.
- Use the “**Previous Page**” and “**Next Page**” buttons to go to the previous or next page within a file.
- Use Acrobat’s extensive search capabilities, such as the “**Find**” tool and “**Search Index**” tool to perform comprehensive searches as required.

### Table of Contents and Index

Use the Table of Contents bookmarks to navigate a desired topic. Click any item to instantly jump to that section of the guide. You can also use the **Index** to jump to specific topics within a chapter. Each page number in the **Index** is a hyperlink.

### General Operations

To ensure trouble-free operation, please follow all procedures as listed below:

- For detailed installation instructions, refer to chapter 3 “Hardware Installation” on page 38.
- For communication software control guide, refer to Chapter 5, “Communication Software Control Guide” on page 57.
- For system setup and operations, refer to Chapter 6, “System Setup and Operations” on page 87.



# 1. Brief Introduction

## Terms and Definitions

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### Term and Definitions

The following terms and definitions are used throughout this guide.

- **“ASCII”**: American Standard for Information Interchange. The standard code consisting of 7-bit coded characters (8 bits including parity check) used to exchange information between data processing systems, data communication systems, and associated equipment. The ASCII set contains control characters and graphic characters.
- **“Aspect ratio”**: The relationship of the horizontal dimension to the vertical dimension of an image. In viewing screens, standard TV is 4:3, or 1.33:1; HDTV is 16:9, or 1.78:1. Sometimes the “:1” is implicit, making TV = 1.33 and HDTV = 1.78.
- **“AV”**: Audio visual or audio video.
- A **“Background”** is an unscaled source, typically originating from a computer. A background source appears at the system’s lowest priority — visually in back of all other sources.
- **“Baudrate”**: Named of J.M.E. Baudot, the inventor of the Baudot telegraph code. The number of the electrical oscillations per second, called baud rate. Related to, but not the same as, transfer rate in bits per second (bps).
- **“Blackburst”**: The video waveform without the video elements. It includes the vertical sync, horizontal sync, and the chroma burst information. Blackburst is used to synchronize video equipment to align the video output. One signal is normally used to set up an entire video system or facility. Sometimes it is called House sync.
- **“BNC”**: Bayonet Neill-Concelman. A cable connector used extensively in television and named for its inventors. A cylindrical bayonet connector that operates with a twist-locking motion. To make the connection, align the two curved grooves in the collar of the male connector with the two projections on the outside of the female collar, push, and twist. This allows the connector to lock into place without tools.
- **“Brightness”**: Usually refers to the amount or intensity of video light produced on a screen without regard to color. Sometimes called “black level.”
- **“CAT 5”**: Category 5. Describes the network cabling standard that consists of four unshielded twisted pairs of copper wire terminated by RJ-45 connectors. CAT 5 cabling supports data rates up to 100 Mbps. CAT 5 is based on the EIA/TIA 568 Commercial Building Telecommunications Wiring Standard.
- **“Color bars”**: A standard test pattern of several basic colors (white, yellow, cyan, green, magenta, red, blue, and black) as a reference for system alignment and testing. In NTSC video, the most commonly

# 1. Brief Introduction

## Terms and Definitions

- Used color bars are the SMPTE standard color bars. In PAL video, the most commonly used color bars are eight full field bars. In the computer, the most commonly used color bars are two rows of reversed color bars.
- **“Color burst”**: In color TV systems, a burst of sub carrier frequency located on the back porch of the composite video signal. This serves as a color synchronizing signal to establish a frequency and phase reference for the chroma signal. Color burst is 3.58 MHz for NTSC and 4.43 MHz for PAL.
- **“Color temperature”**: The color quality, expressed in degrees Kelvin (K), of a light source. The higher the color temperature, the bluer the light. The lower the temperature, the redder the light. Benchmark color temperature for the A/V industry includes 5000°K, 6500°K, and 9000°K.
- **“Contrast ratio”**: The ratio of the high light output level divided by the low light output level. In theory, the contrast ratio of the television system should be at least 100:1, if not 300:1. In reality, there are several limitations. In the CRT, light from adjacent elements contaminate the area of each element. Room ambient light will contaminate the light emitted from the CRT. Well-controlled viewing conditions should yield a practical contrast ratio of 30:1 to 50:1.
- **“DVI”**: Digital Visual Interface. The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video.
- **“EDID”**: Extended Display Identification Data – EDID is a data structure used to communicate video display information, including native resolution and vertical interval refresh rate requirements, to a source device. The source device will then output the optimal video format for the display based on the provided EDID data, ensuring proper video image quality. This communication takes place over the DDC – Display Data Channel.
- **“Ethernet”**: A Local Area Network (LAN) standard officially known as IEEE 802.3. Ethernet and other LAN technologies are used for interconnecting computers, printers, workstations, terminals, servers, etc. within the same building or campus. Ethernet operates over twisted pair and over coaxial cable at speeds starting at 10Mbps. For LAN interconnectivity, Ethernet is physical link and data link protocol reflecting the two lowest layers of the OSI Reference Model.
- **“Frame”**: In interlaced video, a frame is one complete picture. A video frame is made up of two fields, or two sets of interlaced lines. In a film, a frame is one still picture of a series that makes up a motion picture.

# 1. Brief Introduction

## Terms and Definitions

- **“Gamma”**: The light output of a CRT is not linear with respect to the voltage input. The difference between what you should have and what is actually output is known as gamma.
- **“HDMI” - High – Definition Multimedia Interface**: An interface used primarily in consumer electronics for the transmission of uncompressed high definition video, up to 8 channels of audio, and control signals, over a single cable. HDMI is the de facto standard for HDTV displays, Blu-ray Disc players, and other HDTV electronics. Introduced in 2003, the HDMI specification has gone through several revisions.
- **“HDSI”**: The high-definition version of SDI specified in SMPTE-292M. This signal standard transmits audio and video with 10 bit depth and 4:2:2 color quantization over a single coaxial cable with a data rate of 1.485 Gbit/second. Multiple video resolutions exist including progressive 1280x720 and interlaced 1920x1080 resolutions. Up to 32 audio signals are carried in the ancillary data.
- **“JPEG” (Joint photographic Expects Group)**: Commonly used method of loss compression for photographic images using a discreet cosine transfer function. The degree of compression can be adjusted, allowing a selectable tradeoff between storage size and image quality. JPEG typically achieves 10:1 compression with little perceptible loss in image quality. Produces blocking artifacts.
- **“MPEG”**: Motion Picture Expect Group. A standard committee under the auspices of the International Standards Organization working on algorithm standards that allows digital compression, storage and transmission of moving image information such as motion video, CD-quality audio, and control data at CD-ROM bandwidth. The MPEG algorithm provides inter-frame compression of video images and can have an effective compression rate of 100:1 to 200:1.
- **“NTSC”**: The color video standard used in North America and some other parts of the world created by the National Television Standards Committee in the 1950s. A color signal must be compatible with black-and-white TV sets. NTSC utilizes an interlaced video signals, 525 lines of resolution with a refresh rate of 60 fields per second (60 Hz). Each frame is comprised of two fields of 262.5 lines each, running at an effective rate of 30 frames per second.
- **“PAL”**: Phase Alternate Line. A television standard in which the phase of the color carrier is alternated from line to line. It takes four full pictures (8 fields) for the color-to-horizontal phase relationship to return to the reference point. This alternation helps cancel out phase errors. For this reason, the hue control is not needed on a PAL TV set. PAL, in many transmission forms, is widely used in Western Europe, Australia, Africa, the Middle East, and Micronesia. PAL uses 625-line,

# 1. Brief Introduction

## Terms and Definitions

50-field (25 fps) composite color transmission system.

- **“Operator”**: Refers to the person who uses the system.
- **“PIP”**: Picture-in-Picture. A small picture within a larger picture created by scaling down one of the images to make it smaller. Each picture requires a separate video source such as a camera, VCR, or computer. Other forms of PIP displays include Picture-by-Picture (PBP) and Picture-with-Picture (PWP), which are commonly used with 16:9 aspect display devices. PBP and PWP image formats require a separate scaler for each video window.
- **“Polarity”**: The positive and negative orientation of a signal. Polarity usually refers to the direction or a level with respect to a reference (e.g. positive sync polarity means that sync occurs when the signal is going in the positive direction).
- **“RJ-45”**: Registered Jack-45. A connector similar to a telephone connector that holds up to eight wires used for connecting Ethernet devices.
- **“RS-232”**: An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either DB-9 or DB-25 connectors. This standard is used for relatively short-range communication and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length, and type of connector to be used. The standard specifies component connection standards with regard to the computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard.
- **“Saturation”**: Chroma, chroma gain. The intensity of the color, or the extent to which a given color in any image is free from white. The less white in a color, the truer the color or the greater its saturation. On a display device, the color control adjusts the saturation. Not to be confused with the brightness, saturation is the amount of pigment in a color, and not the intensity. Low saturation is like adding white to the color. For example, a low-saturated red looks pink.
- **“Scaling”**: A conversion of a video or computer graphic signal from a starting resolution to a new resolution. Scaling from one resolution to another is typically done to optimize the signal for input to an image processor, transmission path or to improve its quality when presented on a particular display.
- **“SDI”**: Serial Digital Interface. The standard based on a 270 Mbps transfer rate. This is a 10-bit, scrambled, polarity independent interface with common scrambling for both component ITU-R 601 and composite digital video and four channels of (embedded) digital audio.
- **“Seamless Switching”**: A feature found on many video switchers. This

# 1. Brief Introduction

## Terms and Definitions

feature causes the switcher to wait until the vertical interval to switch. This avoids a glitch (temporary scrambling) which normally is seen when switching between sources.

- **“SMPTE”**: Society of Motion Picture and Television Engineers. A global organization, based in the United States that sets standards for base band visual communications. This includes film as well as video and television standards.
- **“S-Video”**: A composite video signal separated into the luma (“Y” is for luma, or black and white information; brightness) and the chroma (“C” is an abbreviation for chroma, or color information).
- **“Sync”**: Synchronization. In video, sync is a means of controlling the timing of an event with respect to other events. This is accomplished with timing pulses to insure that each step in a process occurs at the correct time. For example, horizontal sync determines exactly when to begin each horizontal scan line. Vertical sync determines when the image is to be refreshed to start a new field or frame. There are many other types of sync in video system. (Also known as “sync signal” or “sync pulse.”)
- **“TCP/IP”**: Transmission Control Protocol/Internet Protocol. The communication protocol of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.
- **“USB”**: Universal Serial Bus. USB was developed by seven PC and telecom industry leaders (Compaq, DEC, IBM, Intel, Microsoft, NEC, and Northern Telecom). The goal was easy plug-and-play expansion outside the box, requiring no additional circuit cards. Up to 127 external computer devices may be added through a USB hub, which may be conveniently located in a keyboard or monitor. USB devices can be attached or detached without removing computer power. The number of devices being designed for USB continues to grow, from keyboards, mice, and printers to scanners, digital cameras, and ZIP drives.
- **“VESA”**: Video Electronics Standards Association. A nonprofit number organization dedicated to facilitating and promoting personal computer graphics through improved standards for the benefit of the end-user. [www.vesa.org](http://www.vesa.org)
- **“VGA”**: Video Graphics Array. Introduced by IBM in 1987, VGA is an analog signal with TTL level separate horizontal and vertical sync. The video outputs to a 15-pin HD connector and has a horizontal scan frequency of 31.5 kHz and vertical frequency of 70 Hz (Mode 1, 2) and 60 Hz (Mode 3). The signal is non-interlaced in modes 1, 2, and 3 and interlaced when using the 8514/A card (35.5 kHz, 86 Hz) in mode 4. It

# 1. Brief Introduction

## Terms and Definitions

has a pixel by line resolution of 640×480 with a color palette of 16 bits and 256,000 colors.

- **“YCrCb”**: Used to describe the color space for interlaced component video.
- **“YPbPr”**: Used to describe the color space for progressive-scan (non-interlaced) component video.

# 1. Brief Introduction

## System Overview

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### System Overview

VSP 516S is a video scan converter and scaler. It has nine video and graphic inputs and five pairs of audio inputs. It accepts all video signals including RGB computer video, HDTV and standard definition video. It automatically detects input formats and converts input resolutions, as well as process synchronized audio and video. It supports seamless switching, higher resolution and refresh rate features, meeting the demand for quick AV synchronization and application requirements. VSP 516S had been introduced into LED video processor market for 3 years, and it is a welcome model for its incomparable cost performance.

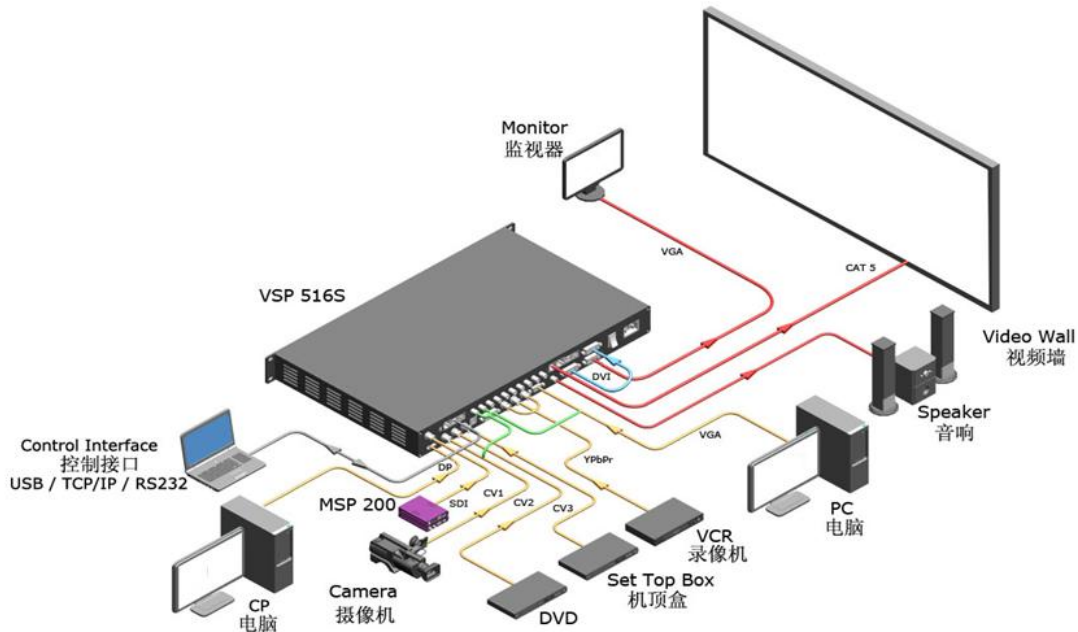
# 1. Brief Introduction

## Application Questions

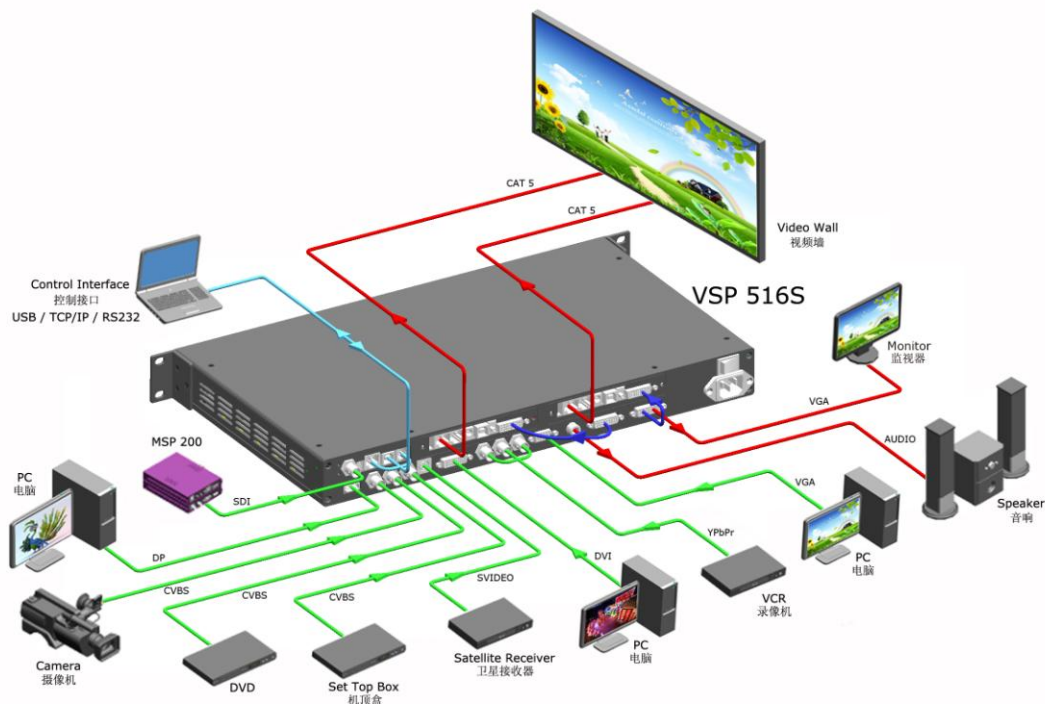
## Application Questions

We offer solutions to demand technical problems. Any application questions, or required further information, please contact with our Customer Support Engineers.

Version 1: VSP 516S with audio:



Version 2: VSP 516S with two sending cards:





## 2. Hardware Orientation

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### In This Chapter

This chapter provides detailed information about the VSP 516S hardware. The following topics are discussed:

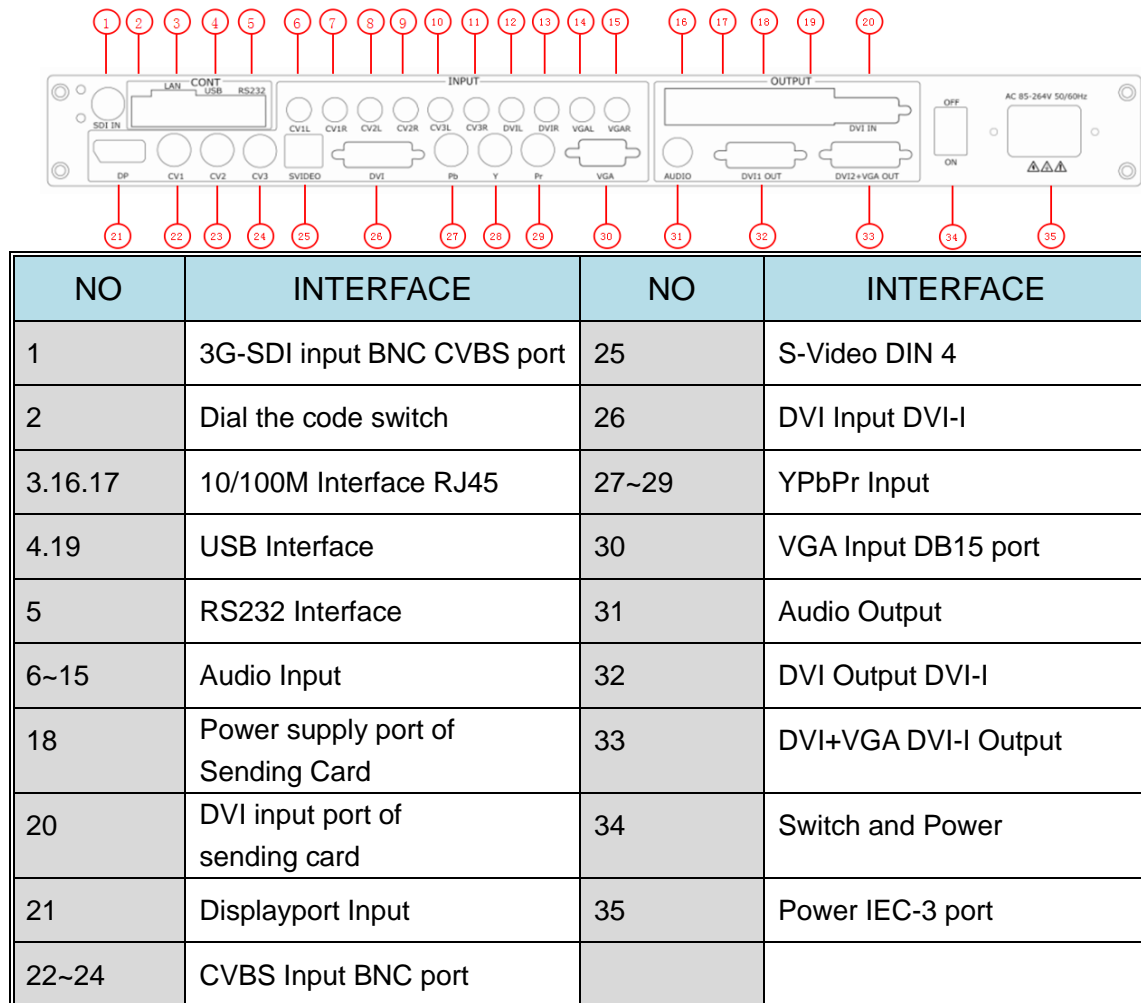
- [VSP 516S Back Panel](#)
- [VSP 516S Front Panel](#)

## 2. Hardware Orientation

### VSP 516S Back Panel

## VSP 516S Back Panel

At present there are 2 versions of VSP 516S. The figure below illustrates the professional interface and control signals of VSP 516S back panel with audio.



### CONT Interface

#### 2: Dial Switch

If the two dial switches are upwards, the device is in normal work, and if they are downwards, the device is in upgrade state. OLED module light is off when the device is in upgrade state. Some of the button lights turn on, and the device will not work.

#### 3: 10/100M UDP Interface

## 2. Hardware Orientation

### VSP 516S Back Panel

Used to connect the windows control program or device upgrade.

#### **4: USB Interface**

Used to connect the windows control program or device upgrade.

#### **5: RS232 Interface**

Used to connect the windows control program or device upgrade.

### **INPUT Interface**

It includes 1 3G-SDI input (SDI module), 3 CVBS inputs by BNC interfaces, 1 S-video, 1 DVI-I input, 1 VGA input by DB15 interface, 1 Displayport, 3 YPbPr and 10 Audio inputs.

#### **6~15: Audio Input**

Audio input, input audio signals from the DVD player, hardware player, and digital box.

#### **1: 3G-SDI Input**

SDI input, input video signal from HD camera and radio processing equipment, connect SDI interface via 75 ohms impedance BNC port.

#### **21: Displayport Input**

Displayport input, Input the video signal from HD player, computer.

#### **22~24: CVBS Input**

CVBS input, input standard video signal from players, cameras etc., supported resolution 480i and 576i via BNC. Supported standards include: PAL, NTSC and SECAM.

#### **25: S-Video Input**

S-Video input, used to input S-Video signal (PAL, NTSC, SECAM compatible).

#### **26: DVI Input**

DVI input, input the video signal from computer, DVI signal generator. If the

## 2. Hardware Orientation

### VSP 516S Back Panel

EDID is HDMI, the DVI input can be compatible with HDMI 1.3.

(This connection can not support hot-plugging)

#### **27~29: YPbPr Input**

R/Pr G/Y B/Pb BNC, support SD/HD analog video input, up to 1080p60.

#### **30: VGA Input**

VGA input, input the video signal from HD player and Computer, etc.

compatible with YPbPr signal, input signal via the DB15 interface.

### **OUTPUT**

#### **16.17: 10/100M Interface RJ45**

Gigabit copper port, used to connect LED display.

#### **18: Power Supply Port of Sending Card**

Power has been already supplied by video processor itself, no external power supply needed.

#### **19: USB Control Port of Sending Card**

#### **20: DVI Input**

Input the DVI out originating from other video processors.

(This DVI connector does not support hot-plugging)

#### **31: AUDIO Output**

It is used to access the speakers or audio power amplifier system. Can be connected with the DVI output interface video processor directly.

(This connector does not support hot-plugging)

#### **32: DVI Output**

Connect to the monitor or LED display which has DVI interface.

(This connection can not support hot-plugging)

#### **33: DVI +VGA DVI Output**

## 2. Hardware Orientation

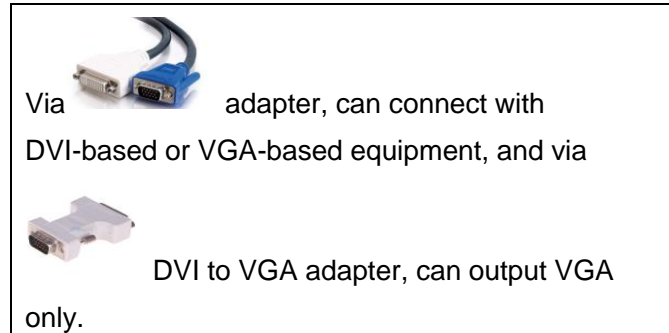
### VSP 516S Back Panel

DVI +VGA output via DVI connector connect to the monitor or LED display which has DVI interface.

(This connection can not support hot-plugging)

DVI +VGA, VGA output connector can be connected to monitor or projector which has VGA interface.

#### **Note**



### **Switch and Power**

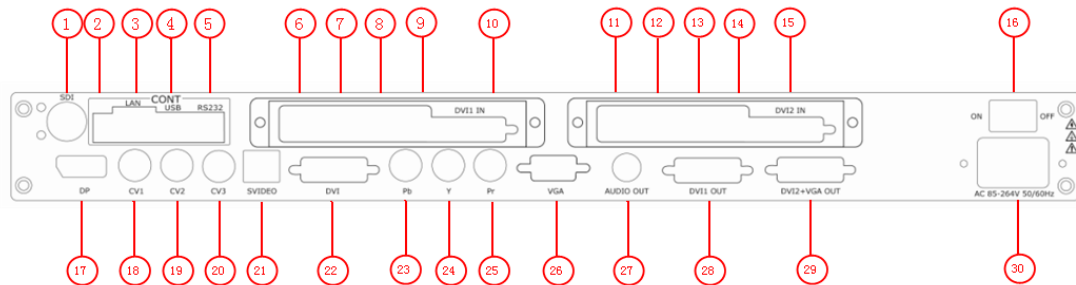
#### **34.35: Power Interface and Switch**

AC 85-264V 3.8A 50/60Hz IEC-3 Power Interface.

## 2. Hardware Orientation

### VSP 516S Back Panel

The figure below illustrates the professional interface and control signals of VSP 516S back panel with two sending cards.



NO	INTERFACE	NO	INTERFACE
1	3G-SDI input BNC CVBS port	18~20	CVBS Input BNC port
2	Dial the code switch	21	S-Video DIN 4
3.6.7.11.12	10/100M Interface RJ45	22	DVI Input DVI-I
4.9.14	USB Interface	23~25	YPbPr Input
5	RS232 Interface	26	VGA Input DB15 port
8.13	Power supply port of Sending Card	27	Audio Output
10.15	DVI input port of sending card	28	DVI Output DVI-I
16	Switch	29	DVI+VGA DVI-I Output
17	Displayport Input	30	Power IEC-3 port

### CONT Interface

#### 2: Dial Switch

If the two dial switches are upwards, the device is in normal work, and if they are downwards, the device is in upgrade state. OLED module light is off when the device is in upgrade state. Some of the button lights turn on, and the device will not work.

#### 3: 10/100M UDP Interface

Used to connect the windows control program or device upgrade.

#### 4: USB Interface

## 2. Hardware Orientation

### VSP 516S Back Panel

Used to connect the windows control program or device upgrade.

### **5: RS232 Interface**

Used to connect the windows control program or device upgrade.

### **INPUT Interface**

It includes 1 3G-SDI input (SDI module), 3 CVBS inputs by BNC interfaces, 1 S-video, 1 DVI-I input (compatible with HDMI), 1 VGA input by DB15 interface, 1 Displayport and 3 YPbPr inputs.

### **1: 3G-SDI Input**

SDI input, input video signal from HD camera and radio processing equipment, connect SDI interface via 75 ohms impedance BNC port.

### **17: Displayport Input**

Displayport input, Input the video signal from HD player, computer.

### **18~20: CVBS Input**

CVBS input, input standard video signal from players, cameras etc., supported resolution 480i and 576i via BNC. Supported standards include: PAL, NTSC and SECAM.

### **21: S-Video Input**

S-Video input, used to input S-Video signal (PAL, NTSC, SECAM compatible).

### **22: DVI Input**

DVI input, input the video signal from computer, DVI signal generator. If the EDID is HDMI, the DVI Can be compatible with HDMI 1.3.

(This connection can not support hot-plugging)

### **23~25: YPbPr Input**

R/Pr G/Y B/Pb BNC, support SD/HD analog video input, up to 1080p60.

## 2. Hardware Orientation

### VSP 516S Back Panel

#### **26: VGA Input**

VGA input, input the video signal from HD player and Computer, etc.

compatible with YPbPr signal, input signal via the DB15 interface.

#### **OUTPUT**

#### **6.7.11.12: 10/100M Interface RJ45**

Gigabit copper port, used to connect LED display.

#### **8.13: Power Supply Port of Sending Card**

Power has been already supplied by video processor itself, no external power supply needed.

#### **9.14: USB Control Port of Sending Card**

#### **10.15: DVI Input**

Input the DVI out originating from other video processors.

(This DVI connector does not support hot-plugging)

#### **27: AUDIO Output**

It is used to access the speakers or audio power amplifier system. Can be connected with the DVI output interface video processor directly.

(This connector does not support hot-plugging)

#### **28: DVI Output**

Connect to the monitor or LED screen which has DVI interface.

(This connection can not support hot-plugging)

#### **29: DVI +VGA DVI Output**

DVI +VGA output via DVI connector connect to the monitor or LED display which has DVI interface.

(This DVI connector does not support hot-plugging)

DVI +VGA, VGA output connector can be connected to monitor or projector

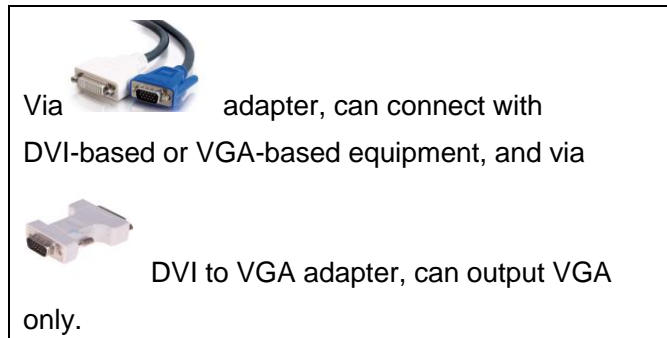


## 2. Hardware Orientation

### VSP 516S Back Panel

which has VGA interface.

#### Note



### Switch and Power

#### 16.30: Power Interface and Switch

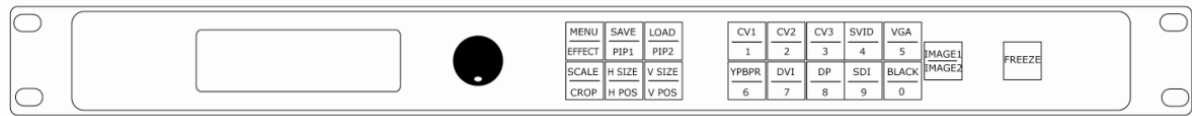
AC 85-264V 3.8A 50/60Hz IEC-3 Power Interface.

## 2. Hardware Orientation

### VSP 516S Front Panel

### VSP 516S Front Panel

VSP 516S front panel is as following:



### OLED Panel

Used to show button menu and menus for interactive communication.

### Menu Buttons



MENU/EFFECT: Menu and Effect function reuse button.

Push the button to enter to **MENU** function, OLED panel shows **MENU** items, turn the knob to select menu option, push the knob to confirm, push the button can back to the last menu.

For details, please refer to [MENU](#).

Push the button for two times to enter to **EFFECT** function, OLED panel shows the effect menu items. Turn the knob and push to select the **EFFECT** mode, then push the knob to confirm.



SAVE/PIP1: SAVE and PIP1 function reuse button.

Push the button to enter to **SAVE** mode, turn the knob or push the number button to select save position.

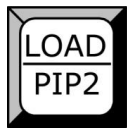
Currently, it supports 10 saving modes. The figure: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 means SAVE1~10.

The OLED panel will show finish after finish saving.

Push the button for two times to enter to **PIP1** shortcut key function, turn the knob for PIP setup. Push the button again to close PIP function.

## 2. Hardware Orientation

### VSP 516S Front Panel



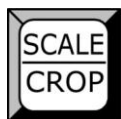
LOAD/PIP2: LOAD and PIP2 function reuse button.

Push the knob to enter **LOAD** mode, turn the knob or push the number button to select LOAD position.

Currently, it supports 10 loading modes. The figure: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 means LOAD SAVE1~10.

The OLED panel will show finish after finish loading.

Push the button for two times to enter to **PIP2** shortcut key function, turn the knob for PIP setup. Push the button again to close PIP function.



SCALE/CROP: SCALE and CROP setting reuse button.

Push the button to enter to SCALE mode. Turn the knob for H SIZE, V SIZE, H POS and V POS setting. User can also push **H SIZE/H POS** button to set the width by knob or number button, push **H SIZE/H POS** button for two times to set the horizontal position by knob or number button. Push **V SIZE/V POS** button to set the height by knob or number button, push **V SIZE/V POS** button for two times to set the vertical position by knob or number button.

Push the button for two times to enter to CROP mode. Turn the knob to choose the crop menu items, and adjust the image by knob or number number.



H SIZE/H POS: Width and horizontal position setting reuse button.

Push the button to enter to the width setting.

Push the button for two times to enter to the horizontal position setting.



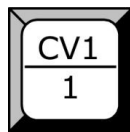
V SIZE/V POS: Height and vertical position setting reuse button.

Push the button to enter to the height setting.

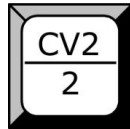
Push the button again to enter to the vertical position setting.

## 2. Hardware Orientation

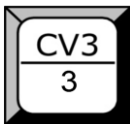
### VSP 516S Front Panel



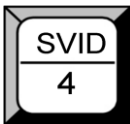
CV1 input selection button, push the button, its LED light is on, output will be switched to this channel.



CV2 input selection button, push the button, its LED light flashes, output will be switched to this channel.



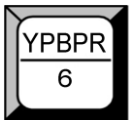
CV3 input selection button, push the button, its LED light flashes, output will be switched to this channel.



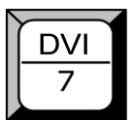
S-Video input selection button, push the button, its LED light flashes, output will be switched to this channel.



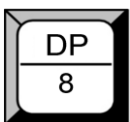
VGA input selection button, push the button, its LED light flashes, output will be switched to this channel.



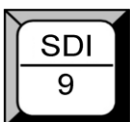
YPBPR input selection button, push the button, its LED light flashes, output will be switched to this channel.



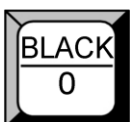
DVI input selection button, push the button, its LED light flashes, output will be switched to this channel.



Displayport input selection button, push the button, its LED light flashes, output will be switched to this channel.



SDI input selection button, push the button, its LED light flashes, output will be switched to this channel.



Black button, push the button, its LED light is on, system default black. The display mode can be set and selected from the OLED panel, push the button

## 2. Hardware Orientation

### VSP 516S Front Panel

again to disable the black function.



IMAGE1/IMAGE2: IMAGEA and IMAGE B select reuse button.



Freeze button, push the button, its LED light is on, the output image is freeze, push the button again, its LED light is off, and return to live image.

#### **Note**

In PIP, both IMAGE A and IMAGE B are freeze.

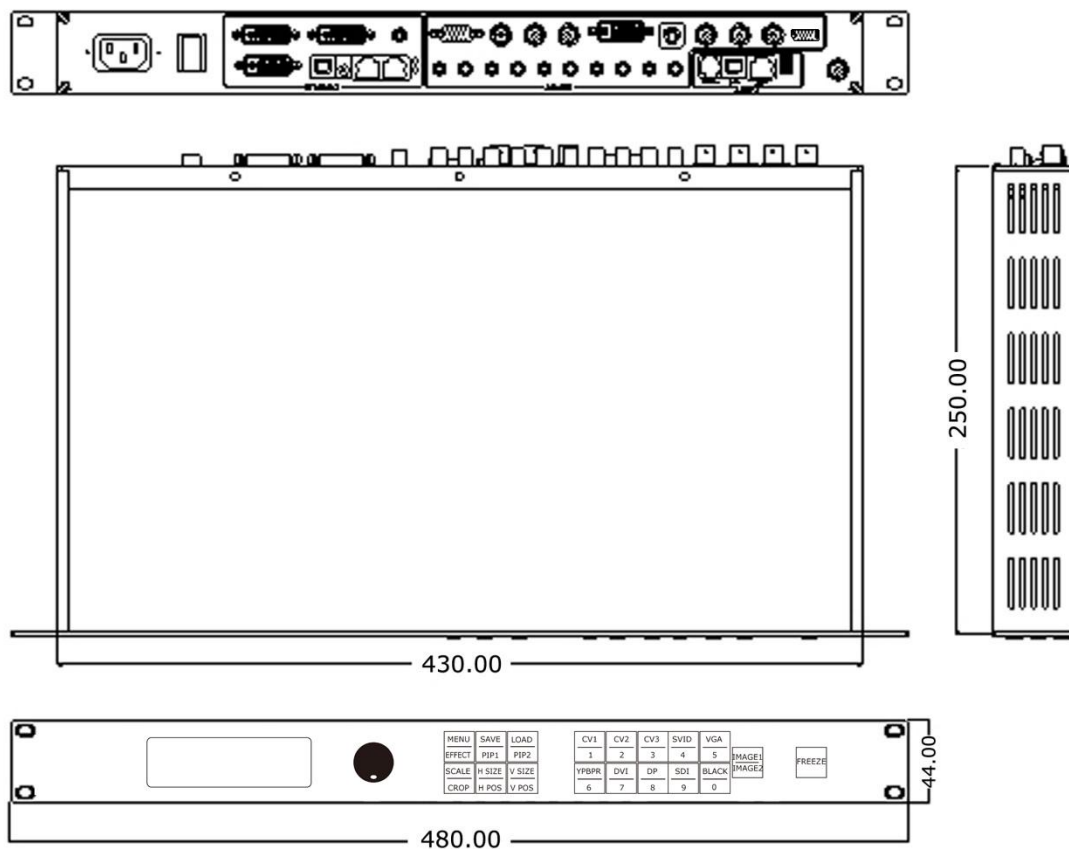
### 3. Hardware Installation

#### In This Chapter

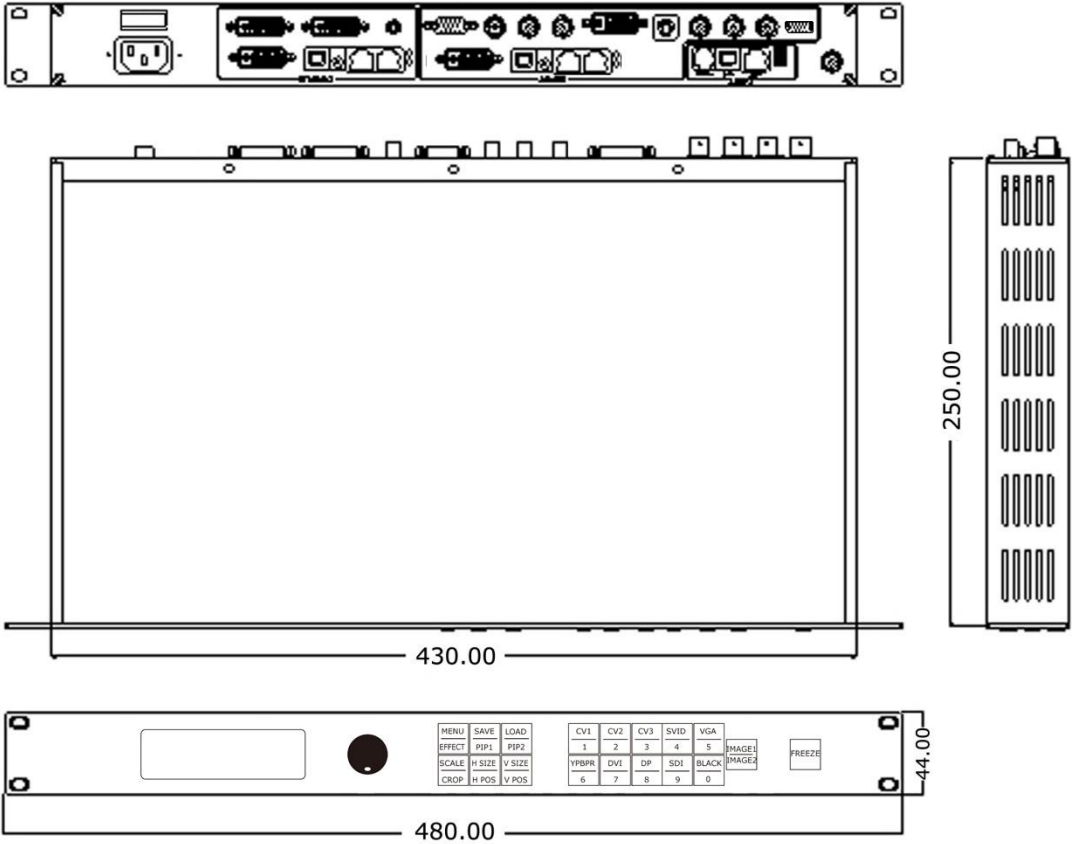
This chapter provides comprehensive installation instruction for VSP 516S hardware:

Following is the size of VSP 516S for your reference.

Version 1: VSP 516S with audio:



Version 2: VSP 516S with two sending cards:



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## Safety Precautions

For all VSP 516S processor installation procedures, please observe the following important safety and handling rules to avoid damage to yourself and the equipment.

- To protect users from electric shock, ensure that the chassis connects to earth via the ground wire provided in the AC power Cord.
- The AC Socket-outlet should be installed near the equipment and be easily accessible.

---

## Unpacking and Inspection

Before opening VSP 516S process shipping box, inspect it for damage. If you find any damage, notify the shipping carrier immediately for all claims adjustments. As you open the box, compare its contents against the packing slip. If you find any shortages, contact your sales representative.

Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

---

## Site Preparation

The environment in which you install your VSP 516S should be clean, properly lit, free from static, and have adequate power, ventilation, and space for all components.



## 4. Menu Orientation

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### In This Chapter

This chapter describes all VSP 516S processor menus, including how they are accessed, the functions that are available, and descriptions of each menu tree (in block diagram format).

The following topics are discussed:

- **MENU**
  - INPUT
  - OUTPUT
  - TRANSITION
  - AUDIO
  - SPLIT
  - SAVE SETUP
  - SYSTEM
  - LANGUAGE
  - FACTORY RESET

## 4. Menu Orientation

### MENU

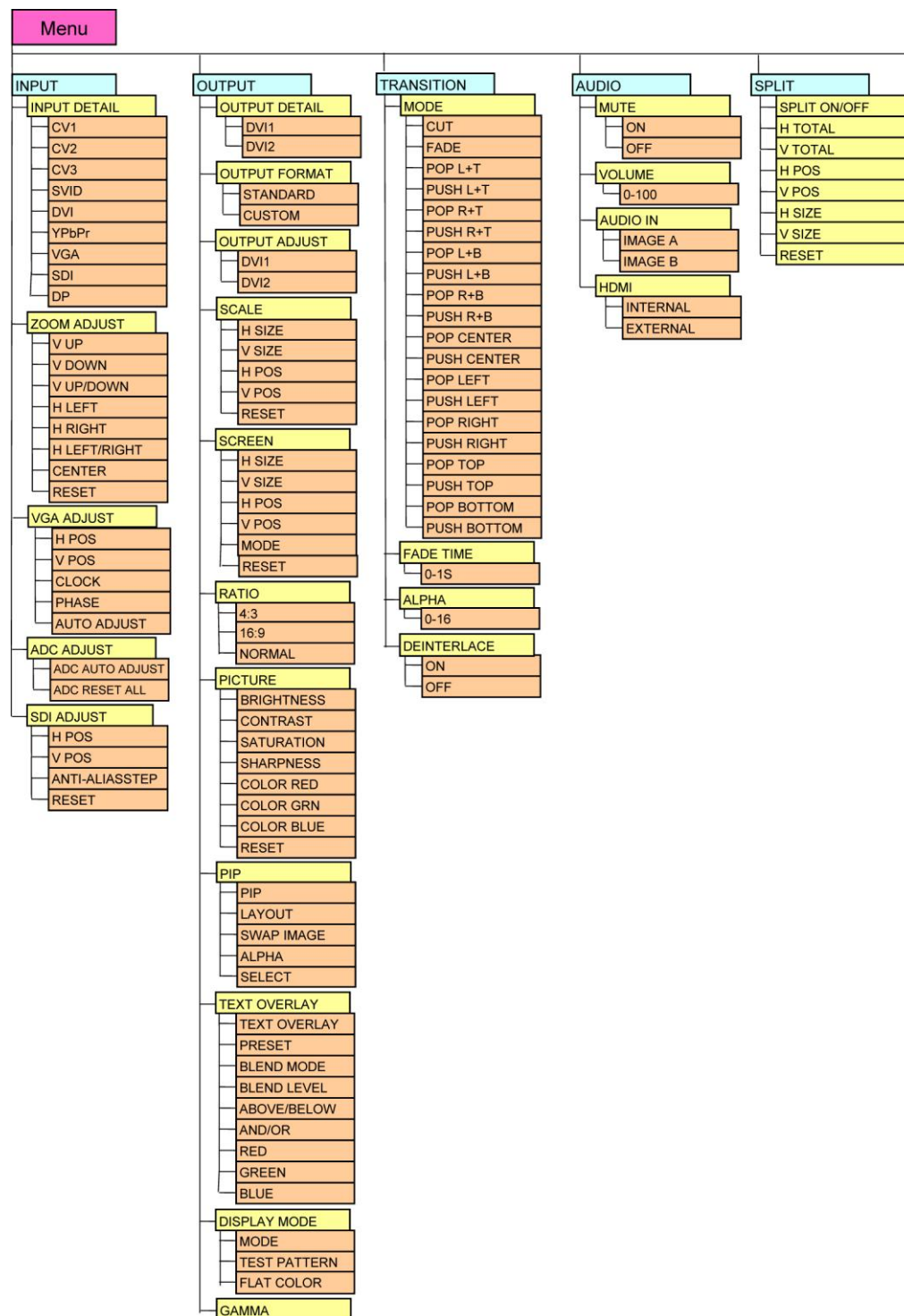
---

### MENU

Push the [MENU/EFFECT] number to enter to the menu items, the menu shown as below. Turn the knob to select the menu item. ">" before the menu means it's in selected state. Push the knob button to enter corresponding setting or view the menu.

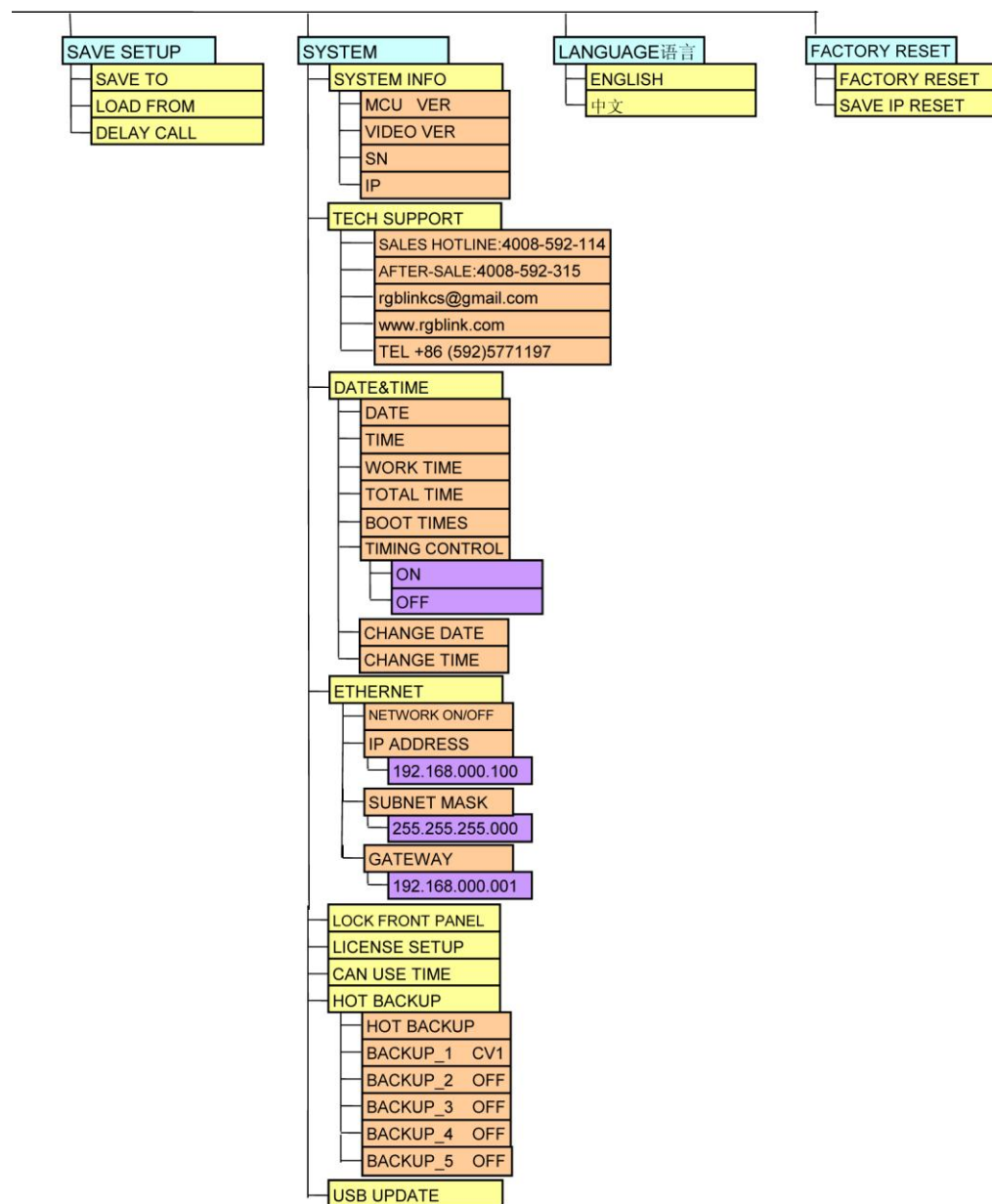
## 4. Menu Orientation

### MENU



## 4. Menu Orientation

### MENU



### INPUT

Push the [MENU/EFFECT] button, OLED display menu, push the knob to select <INPUT>, show menus as follows:

**INPUT DETAIL:** Display input signal information, including CV1, CV2, CV3, S-Video, DVI, YPbPr, VGA, SDI and DP.

**ZOOM ADJUST:** It can adjust the image zoom size and positions, settings including as follows:

## 4. Menu Orientation

### MENU

V UP--image to up zoom.

V DOWN--image to down zoom.

V UP/DOWN--image to up and down zoom.

H LEFT--image to left zoom.

H RIGHT--image to right zoom.

H LIFT/RIGHT--image to left and right zoom.

CENTER--image from center to the edges zoom.

RESET: If image quality distorts by improper operation, it can be recover by reset.

For details, please refer to the instructions in the manual: [How to Set up Image Zoom](#).

**VGA ADJUST:** Adjust VGA input signal, sub menu as follows:

H POS: Image horizontal position.

V POS: Image vertical position.

CLOCK: Input signal clock.

PHASE: Input image phase.

#### Note

Only comments to professional operator.

AUTO ADJUST: Auto adjust VGA input signal H POS, V POS, CLOCK, PHASE, auto adjust to display in full screen image.

#### Note

Comments customers to use this operation in adjusting the VGA input shiftment.

**ADC AUTO ADJUST:** Mainly for brightness auto adjusting.

**SDI ADJUST:** When SDI input signal image shift, please adjust image's H POS and V POS to display in full screen image.

Sub menu as follows:

## 4. Menu Orientation

### MENU

H POS: Image horizontal position.

V POS: Image vertical position.

ANTI-ALIAS: If there is sawtooth when input SDI signal, user can do anti-alias processing by modify STEP\_1 to STEP\_7, and different STEP with different effects. System default STEP\_1.

RESET: If image quality distorts by improper operation, it can be recover by reset.

### OUTPUT

Push the [MENU/EFFECT] button, OLED panel show menu, push the knob to select <OUTPUT>, show menus as follows:

**OUTPUT DETAIL:** Display output signal information of DV1 and DV2, including OUTPUT FORMAT, DVI MODE, BIT DEPTH, DATA RANGE, DE, DE H POS, DE V POS, DE H SIZE, DE V SIZE, H POLARITY and V POLARITY.

**OUT FORMAT:** Output format setting, choose <OUTPUT FORMAT>, push the knob, OLED panel show menus as follows:

**STANDARD:** Push knob button to select the menu item, turn the knob for setting or view the menu. Users can choose different output formats by turning the knob, this option includes 22 common standard output resolutions, shown as follows:

800×600×60, 1024×768×60, 1024×768×75, 1280×720×50, 1280×720×60, 1280×768×60, 1280×800×60, 1280×1024×60, 1360×768×60, 1366×768×60, 1400×1050×60, 1440×800×60, 1440×900×60, 1600×1200×60, 1680×1050×60, 1920×1080×50, 1920×1080×60, 1920×1120×60, 1920×1200×60, 2048×1152×60, 2560×812×60, 2560×816×60.

**CUSTOM:** The special display project or LED display application would like to require special resolution settings to meet the requirement.

## 4. Menu Orientation

### MENU

Details please refer to the instructions in the manual: [How to Do customized Resolution.](#)

**OUTPUT ADJUST:** Output adjust menus, the sub-menu as following:

DVI1, setting as following:

DVI MODE: Can set the protocol as HDMI or DVI, default is DVI output, HDMI signal output will enable when HDMI option checked.

BIT DEPTH: Can set the image bit depth.

DATE RANGE: DVI1 output range, can set as RGB (graphic mode or YCbCr (video mode), RGB output scale range is between 0-255, YCbCr range from 16 to 235.

DE ADJUST: DE adjust, the sub-menu as following:

DE ON/OFF: Can choose to open or close, when choose open, it can be adjusted to DE, as follows:

H SIZE: Width setting.

V SIZE: Height setting.

H POS: Horizontal phase setting.

V POS: Vertical phase setting.

When the signal source of the screen appear black side, can use this function to shift the black out of the screen.

RESET: If image quality distorts by improper operation, it can be recover by reset.

DVI2: Including DVI MODE, DATA RANGE, DE ADJUST, and RESET, same with DVI1.

#### Note

Only comments to professional operator.

**SCALE:** It can adjust the image scale size and image position settings including as follows:

## 4. Menu Orientation

### MENU

H SIZE: Width setting.

V SIZE: Height setting.

H POS: Horizontal phase setting.

V POS: Vertical phase setting.

RESET: If image quality distorts by improper operation, it can be recover by reset.

#### NOTE

The SCALE/CROP button can also fulfill this setting.

For details, please refer to the instructions in the manual: [How to Set up the Size and Position of the Single Image.](#)

**SCREEN:** Screen setting, user can change the screen through the digital setting parameters to easily change the screen size and position. Mainly used in the LED display. Settings as follow:

show menus as follows:

H SIZE: Width setting.

V SIZE: Height setting.

H POS: Horizontal phase setting.

V POS: Vertical phase setting.

Mode: Can choose SCREEN SIZE or FULL SIZE.

RESET: If image quality distorts by improper operation, it can be recover by reset.

For details, please refer to the instructions in the manual: [How to Realize the Screen Size and Full Size Switching.](#)

**RATIO:** Aspect ratio setting, user can choose 4:3, 16:9 and DEFAULT.

**PICTURE:** Picture setting, the sub-menu as following:

BRIGHTNESS: It can change the image brightness via BRIGHTNESS setting.

CONTRAST: It can change the image contrast via CONTRAST setting.



## 4. Menu Orientation

### MENU

**SATURATION:** It can change the image saturation via SATURATION setting.

**SHARPNESS:** It can change the image sharpness via SHARPNESS setting.

**COLOR RED:** It can change the image color red via this setting.

**COLOR GREEN:** It can change the image color green via this setting.

**COLOR BLUE:** It can change the image color blue via this setting.

**RESET:** If image quality distorts by improper operation, it can be recover by reset.

#### Note

Users can set according to their actual situation, this function mainly suitable for these professional operator who knows how to set the image quality correctly. Others are not comments to do these operations. If image distorted by improper operation, it can be initialized operated to recover by factory reset.

**PIP:** PIP setting, menus are as follows:

PIP: Choose ON to set PIP mode.

**LAYOUT:** There are 3 kinds of PIP layouts, the corresponding results are as follows:

PIP L+T



PBP L+R



PBP T+B



**SWAP IMAGE:** It can set PIP to swap exchange, when choose ON, it can switch IMAGE A and IMAGE B.

## 4. Menu Orientation

### MENU

ALPHA: User can set the image transparency, the regulating range is among 0 to 16.

SELECT: Can choose to set the size or position of IMAGE A or IMAGE B individually.

#### Note

User can choose image A or image B by IMAGE 1/IMAGE 2 reuse button.

For details, please refer to the instructions in the manual: [How to Set up the PIP](#).

**TEXT OVERLAY:** Text overlay function, settings are as follows:

TEXT OVERLAY: Can select “ON” or “OFF”, OFF is system default.

PRESET: Can preset value of the following functions, and total 13 modes:

User: User mode.

WhOnBk1: White On Black 1.

WhOnBk2: White On Black 2.

BkOnWh1: Black On White 1.

BkOnWh2: Black On White 2.

GrnOnBk1: Green On Black 1.

GrnOnBk2: Green On Black 2.

GrnOnWh1: Green On White 1.

GrnOnWh2: Green On White 2.

RedOnBk1: Red On Black 1.

RedOnBk2: Red On Black 2.

RedOnWh1: Red On White 1.

RedOnWh2: Red On White 2.

BLEND MODE: Blend mode, with two modes, “Mode 1” and “ Mode 2”.

Mode 1: Graphic content locate at the top and is non-transparent,

## 4. Menu Orientation

### MENU

background transparency is controlled by double-image transparency;

Mode 2: Graphic content is controlled by double-image transparency, the background is completely transparent.

BLEND LEVEL: Can set the image display transparency, the regulating range is among 0 to 16.

ABOVE/BELOW:

ABOVE: In image 2, if the pixel value is higher than the setting value, then the image is the graphic content pixel, otherwise, it is the graphic background pixel. It should combined with "AND/OR" conditions when judging.

BELOW: In image 2, if the pixel value is lower than the setting value, then the image is the graphic content pixel, otherwise, it is the graphic background pixel. It should combined with "AND/OR" conditions when judging.

KEY IN/OUT:

KEY IN: Delete the background, and keep the text title.

KEY OUT: Delete the text title, and keep the background.

RED: Red limit, cut-off point condition of ABOVE and BELOW condition in red channel, the range is 0 ~ 248.

GREEN: Green limit, cut-off point condition of ABOVE and BELOW condition in green channel, the range is 0 ~ 248.

BLUE: Blue limit, cut-off point condition of ABOVE and BELOW condition in blue channel, the range is 0 ~ 248.

For details, please refer to the instructions in the manual: [How to Realize the Text Overlay Setting](#).

**DISPLAY MODE:**

MODE: Image mode selection, user can choose different output modes according to their requirement, such as: black, video image, freeze image, flat color and test pattern.

## 4. Menu Orientation

### MENU

#### Note

The FREEZE button can also fulfill this setting.

TEST PATTERN: Test pattern setting, rotate the knob, there are 66 kinds of modes for choose.

**Notice:** When the input comes from DVI, Displayport (DP), VGA, or SDI (input format is progressive only), the TEST PATTERN function will be enable and ready to operate.

FLAT COLOR: When the output mode is pure color image, choose corresponding red, green and blue color value in this option to meet the practical needs.

**GAMMA:** Gamma setting, press it to adjust the image gamma value; Gamma values include: -1.2, -1.4, -1.6, 1, 1.2, 1.4, 1.6, sRGB.

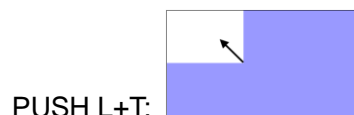
### TRANSITION

Choose [TRANSITION], push the knob to confirm, the OLED display show the level 2 menu as following:

**MODE:** Switch mode, including the following modes:

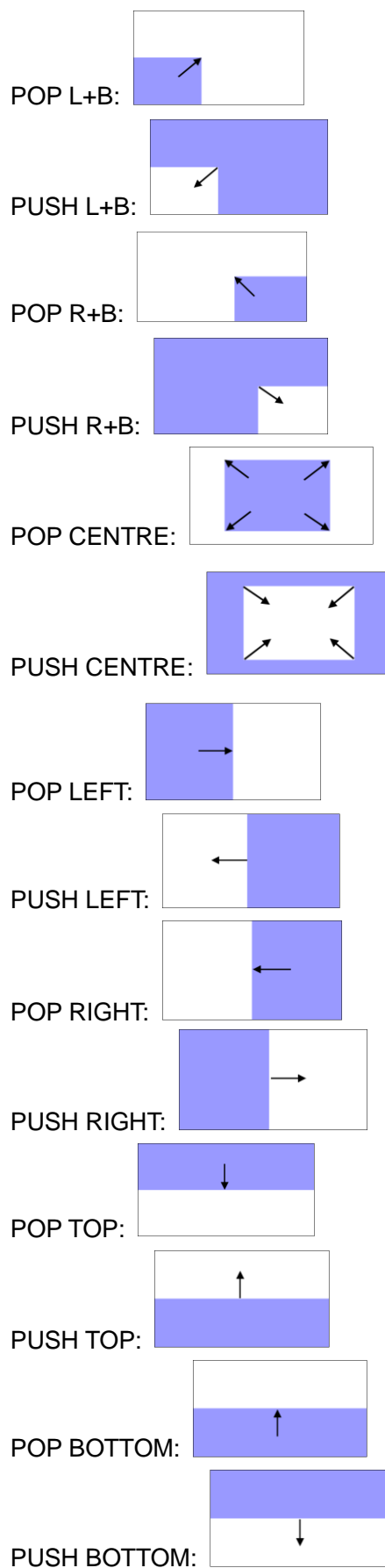
CUT: Seamless switching.

FADE: Fade in fade out effect switching.




## 4. Menu Orientation

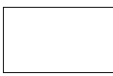
### MENU



## 4. Menu Orientation

### MENU

Note:  On behalf of the image emerging;

 On behalf of the image disappearing;

Arrows represents the direction of the image move, that is, the image that arrow point, is compressed or stretched to the direction that arrow indicates, until disappear or full screen.

**FADE TIME:** Switch time setting. Turn the knob to choose the time and push the knob to confirm. The switching time ranges from 0 to 1.0.

**ALPHA:** Image transparency setting, the regulating range is among 0 to 16.

**DEINTERLACE:** Force Deinterlace function, can choose “ON” or “OFF”.

ON: Force interlace for interlaced signal without effect switching, but with effects switching for progressive signal.

OFF: No deinterlace, with effect switching.

### AUDIO

**MUTE:** Mute, can open or close the mute function.

**VOLUME:** Volume adjustment.

**AUDIO IN:** Can choose audio input source for IMAGE A or IMAGE B.

**HDMI:** Choose internal or external audio for HDMI.

### SPLIT

Choose [SPLIT], push the knob to confirm, the OLED display show the level 2 menu as following:

**SPLIT ON/OFF:** Split function, can choose “ON” or “OFF”.

**H TOTAL:** The total width points of LED display that will split.

**V TOTAL:** The total height points of LED display that will split.

**H POS:** The horizontal position of the device when do split.

**V POS:** The vertical position of the device when do split.

**H SIZE:** The width of the device when do split

## 4. Menu Orientation

### MENU

**V SIZE:** The height of the device when do split.

**RESET:** If image quality distorts by improper operation, it can be recover by reset.

### SAVE SETUP

**SAVE TO:** VSP 516S provides ten save modes, users can save the current operation to SAVE1 to SAVE10.

#### Note

The SAVE/PIP1 button can also fulfill this setting.

**LOAD FROM:** It can call the saved user modes via the call save function.

**DELAY CALL:** Set delay the output time. When more than one equipment power on, and the processor is the end equipment in order to improve question that can't identify the input signal and phenomenon that LED screen appear messy code and flash screen, now need to delay the input time.

### SYSTEM

**SYSTEM INFO:** System information, including:

MCU VER: Information of MCU version.

VIDEO VER: Information of VIDEO version.

SN: Serial number of VSP 516S.

IP: IP address.

**TECH SUPPORT:** Show the sales telephone, after-sale, website, etc.

**DATE&TIME:** Show and change the date or time.

DATE: Display date.

TIME: Display time.

WORK TIME: Show the working time from boot to present.

TOTAL TIME: Total working time.

BOOT TIMES: Boot times.

## 4. Menu Orientation

### MENU

**TIMING CONTROL:** Timing control switch.

**CHANGE DATE.**

**CHANGE TIME.**

**ETHERNET:** Network setting, including:

**NETWORK ON/OFF:** Can choose "ON" or "OFF".

**IP ADDRESS:** 192.168.000.100.

**SUBNET MASK:** 255.255.255.000.

**GATEWAY:** 192.168.000.001.

**LOCK FRONT PANEL:** Through this setting can choose whether to lock the keys, if the key is locked, the equipment will remind: "Buttons are locked! Press MENU key and hold 3s to release!"

**LICENSE SETUP:** The device will not work if excess the prescribed time, there are no signal output, it needs to input password and modify the using time to continue to work.

**CAN USE TIME:** Display the rest of the working time.

**HOT BACKUP:** User can enable or disable the hot backup function. Choose "ON" to set the backup signal for BACKUP\_1 to BACKUP\_5. It will switch to the backup signal if interrupt signal.

**USB UPDATE:** User can update the device by USB.

### LANGUAGE

Through this option, user can choose Chinese or English according to their needs to operate the interface more quickly.

### FACTORY RESET

Enter FACTORY RESET to reset the IP, choose YES and push the knob to confirm, then VSP 516S is reset to its factory settings. After 5 seconds, it completes factory settings and is ready for more operations.



## 5. Communication Software Guideline

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### In This Chapter

This chapter provides detailed information about the control communication software. The following topics are discussed:

- [Software Installation](#)
- [Software Operation](#)
- [How to Connect Windows Control Program by LAN Interface](#)
- [How to Connect Windows Control Program by RS232 Interface](#)
- [How to Connect Windows Control Program by USB Interface](#)

## 5. Communication Software Guideline

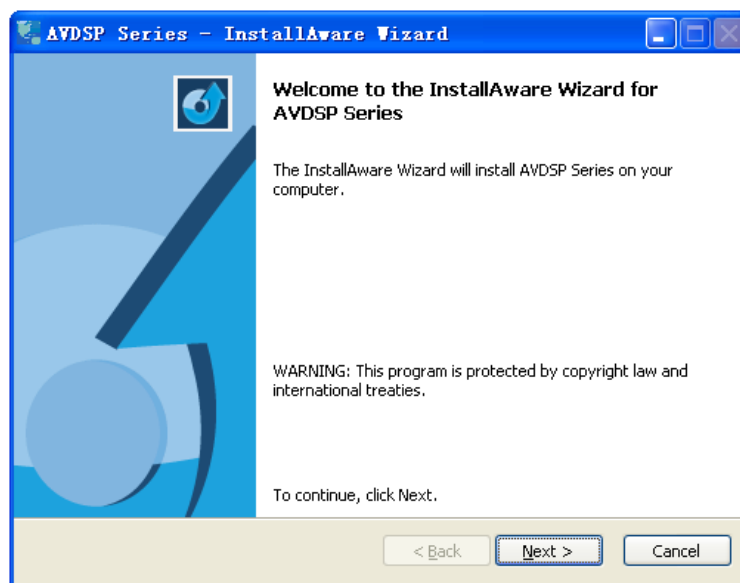
### Software Installation

#### Software Installation

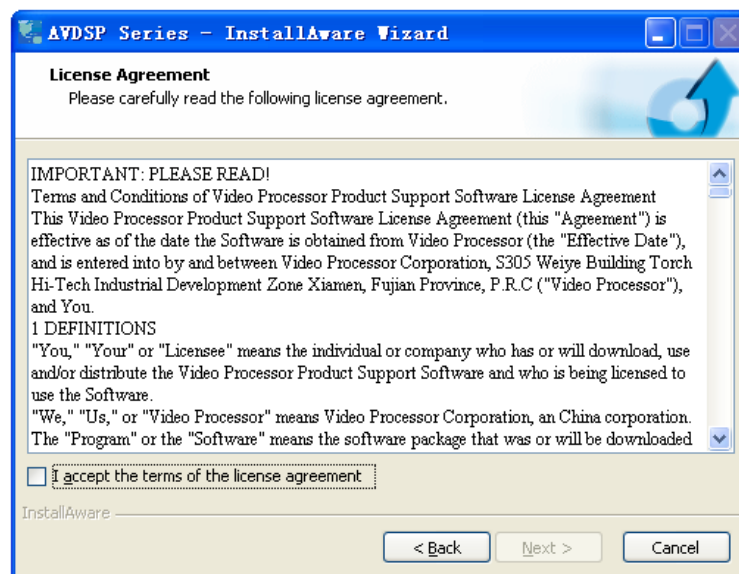
AVDSP video processor is very easy to be configured with user friendly communication software, support drag and drop operation for edit and display. Also it can be customized with schedule function.



Double click to install, English version default for use, click "Next" to next dialog:

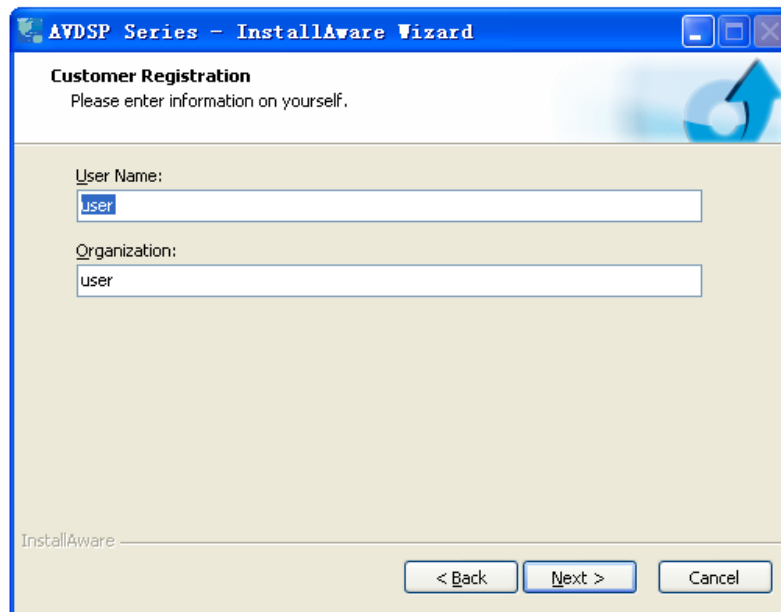


And in next dialog is the user agreement of the software, click Agree to go on:



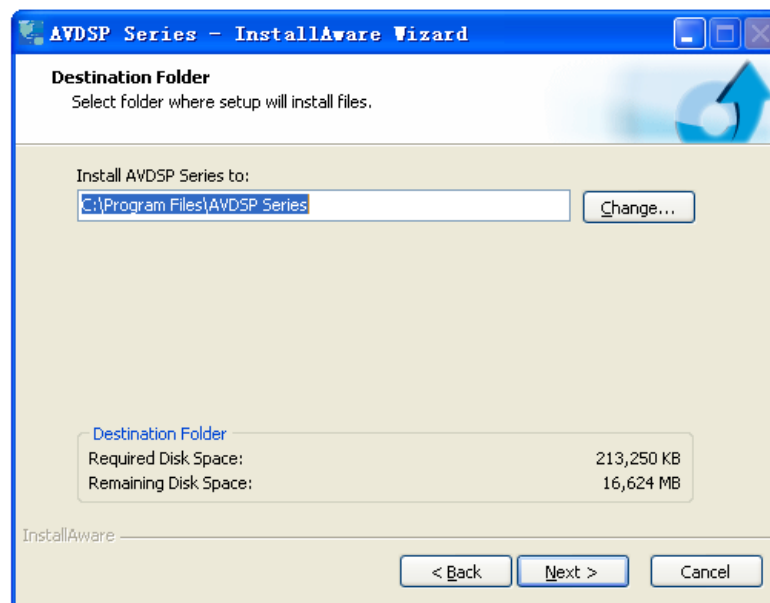
## 5. Communication Software Guideline

### Software Installation



The screenshot shows the 'Customer Registration' step of the 'AVDSP Series - InstallAware Wizard'. The window title is 'AVDSP Series - InstallAware Wizard'. The main heading is 'Customer Registration' with the instruction 'Please enter information on yourself.' Below this, there are two text input fields: 'User Name:' with the value 'user' and 'Organization:' with the value 'user'. At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'InstallAware' logo is visible in the bottom left corner.

User can select “Change” to choose the VSP 516S install software:



The screenshot shows the 'Destination Folder' step of the 'AVDSP Series - InstallAware Wizard'. The window title is 'AVDSP Series - InstallAware Wizard'. The main heading is 'Destination Folder' with the instruction 'Select folder where setup will install files.' Below this, there is a text input field labeled 'Install AVDSP Series to:' containing the path 'C:\Program Files\AVDSP Series'. To the right of this field is a 'Change...' button. Below the input field, there is a section titled 'Destination Folder' containing a table with disk space information:

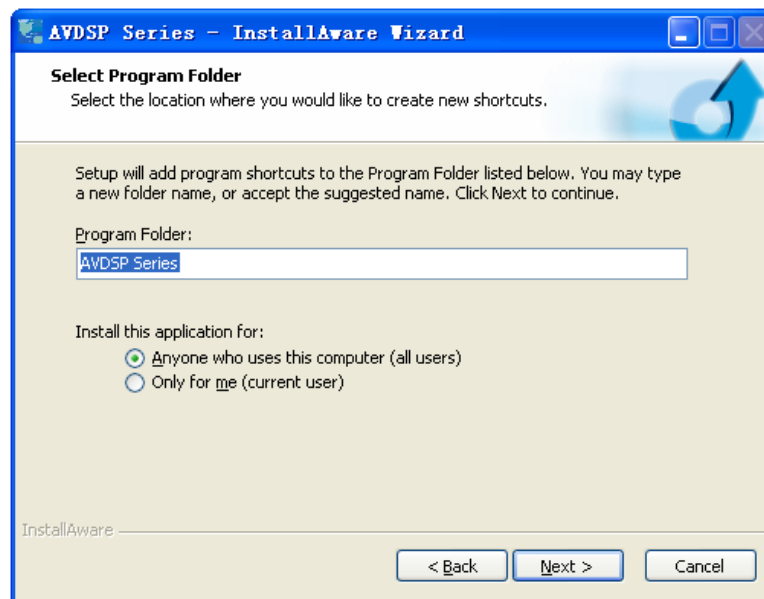
Destination Folder	
Required Disk Space:	213,250 KB
Remaining Disk Space:	16,624 MB

At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'InstallAware' logo is visible in the bottom left corner.

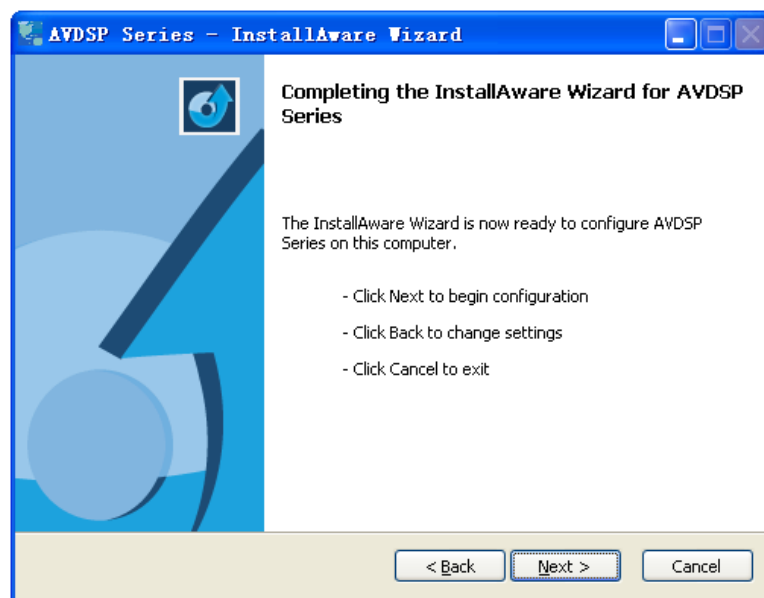
## 5. Communication Software Guideline

### Software Installation

Click “Next” to go on:



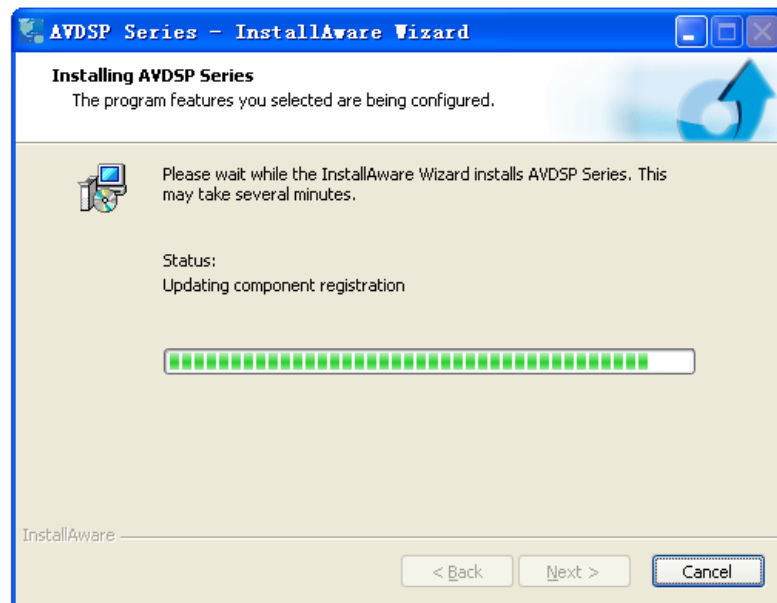
Click “Next” to go on:



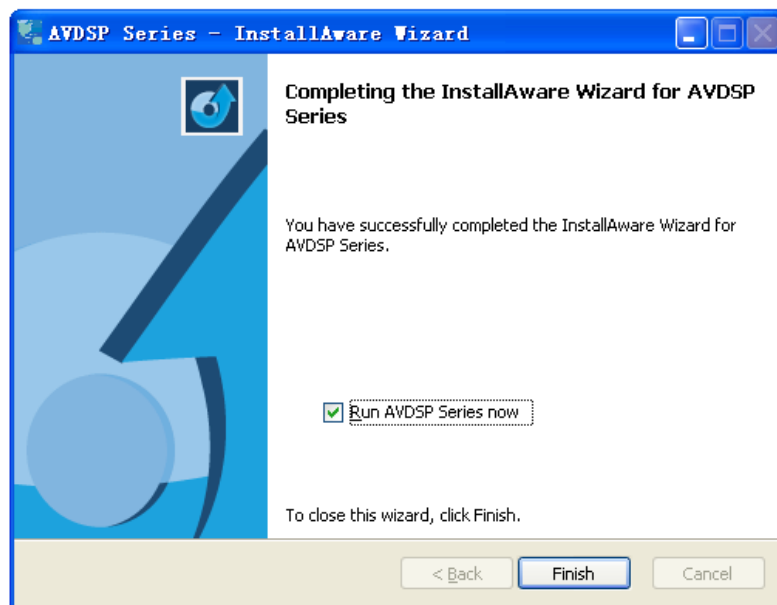
## 5. Communication Software Guideline

### Software Installation

Click “Next” to go on:



Click “Finish” and ready to run VSP 516S console:






## 5. Communication Software Guideline

### Software Operation

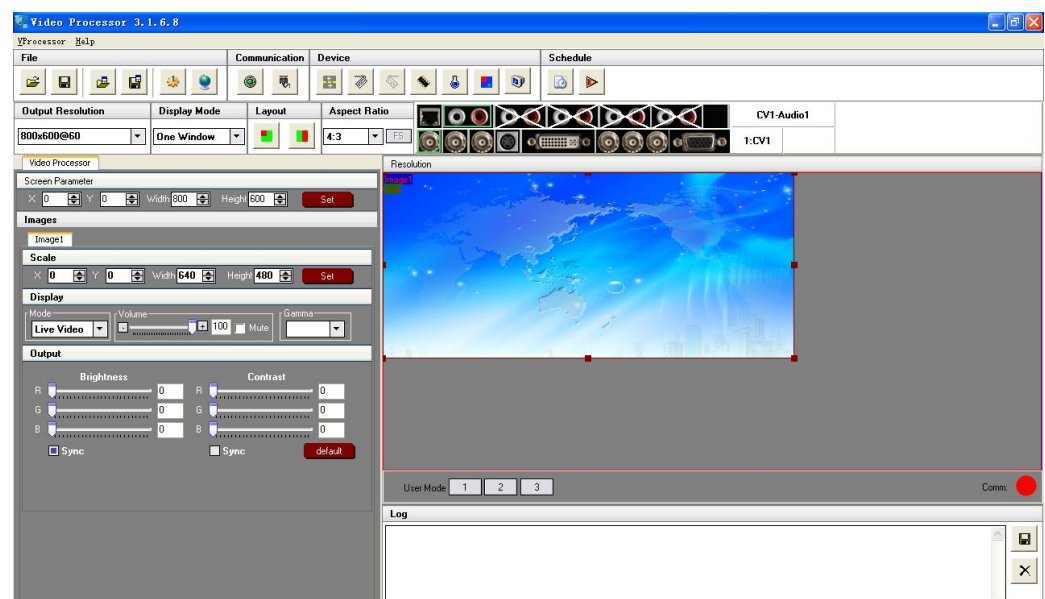
### Software Operation

Install communication which comes with the package of VSP 516S device.

Double click  icon from home screen to run the software.

Double click  icon, choose and click  to run the software.

VSP 516S communication software interface as shown:



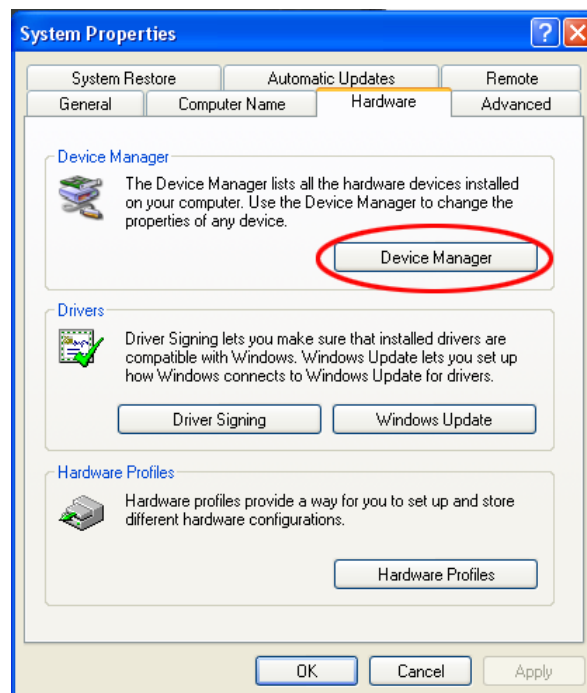
### Connection

When control video processor through PC software, besides the power cord, the product default equip with a line that is COM (RS-232), 9-pin (DB9F), RJ11 COM crystal head (6 B4C). Below are the details about connection of steps:

First connect 9-pin (DB9F) to the computer on the corresponding port, and connect COM crystal to RS232 port on video processor. Open video processor; Next, operate the computer, back to computer desktop, right click [My computer] to [Properties], find the [Hardware] option card, as follows, left click [Device manager]:

## 5. Communication Software Guideline


### Software Operation






Find [(COM and LPT)] port in [device manager], click the plus sign on the left, record serial interface name that computer provides, as following chart, the serial port is COM1.



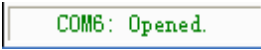
Confirm used COM and open control software, click **[communication]**

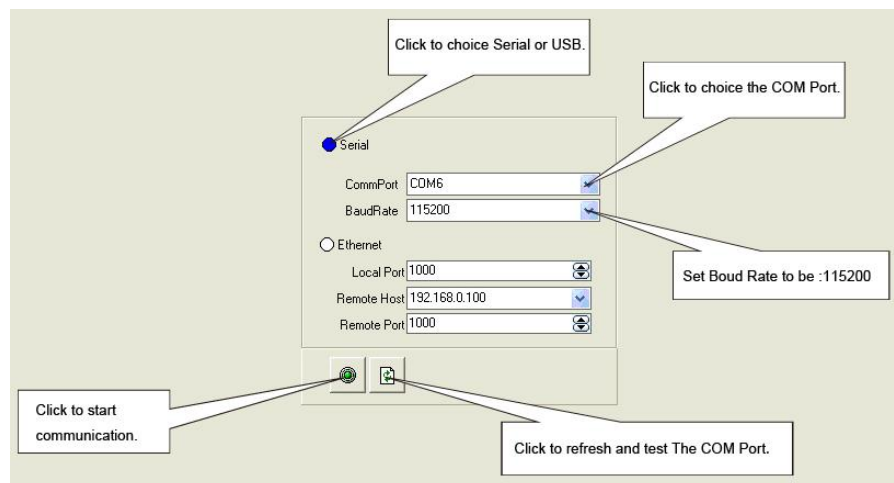
page, enter setup option, Serial is the default COM, click icon  to refresh COM number, choose available COM, default Baud rate is 115200.

After serial setting, click  icon, the icon becomes   when

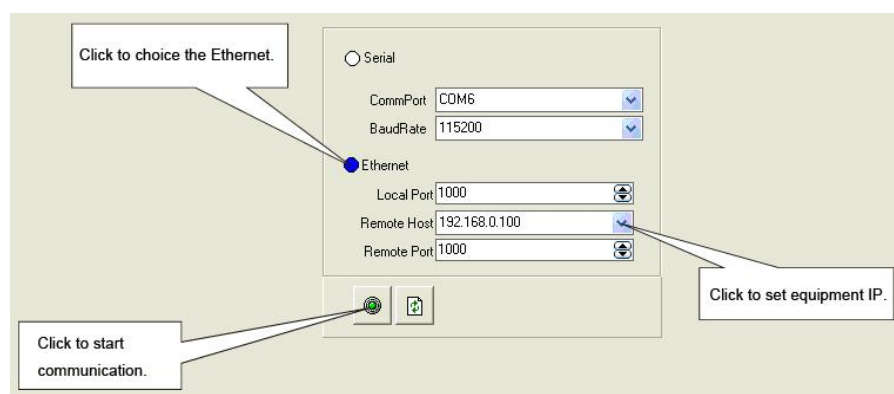
## 5. Communication Software Guideline



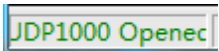
### Software Operation

successfully connected, on the left button showing , meaning has connected video processor through COM, and can control video processor through the PC software.



For more detailed information, please refer to: [“How to Connect Windows Control Program by RS232 Interface”](#). User can also connect the computer and VSP 198CVS with USB cable. For details, please refer to [“How to Connect Windows Control Program by USB Interface”](#).



Ethernet, user can fill any number less than 1023 in local port, the remote port must be 192.168.0.100 and the remote port must be 1000. After setting above, click the icon  to connect with the net work. If successful connect, the icon becomes , status on the left button showing .



## 5. Communication Software Guideline

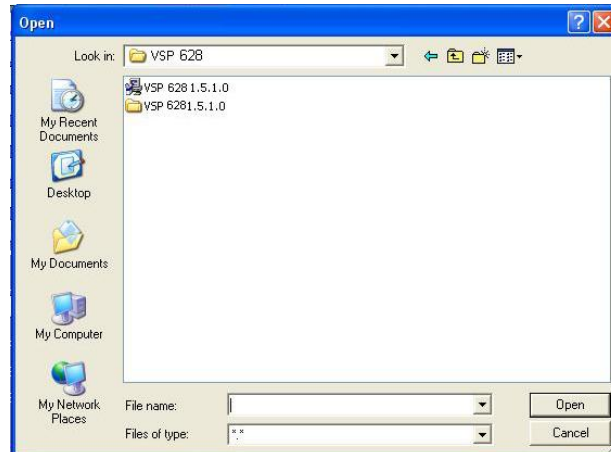
### Software Operation

#### Use

#### File Toolbar



: Open script. User can open saved script and alter its parameters.



: Save script. Save current user parameters as script to the prescribed path.



: Import template. There are six templates for user. Users can setup one of templates as the common one.

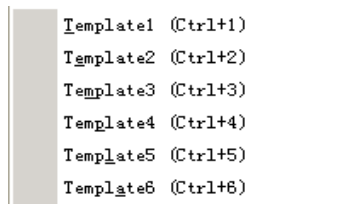
```
Template1 (Ctrl+1)
Template2 (Ctrl+2)
Template3 (Ctrl+3)
Template4 (Ctrl+4)
Template5 (Ctrl+5)
Template6 (Ctrl+6)
```

## 5. Communication Software Guideline


### Software Operation

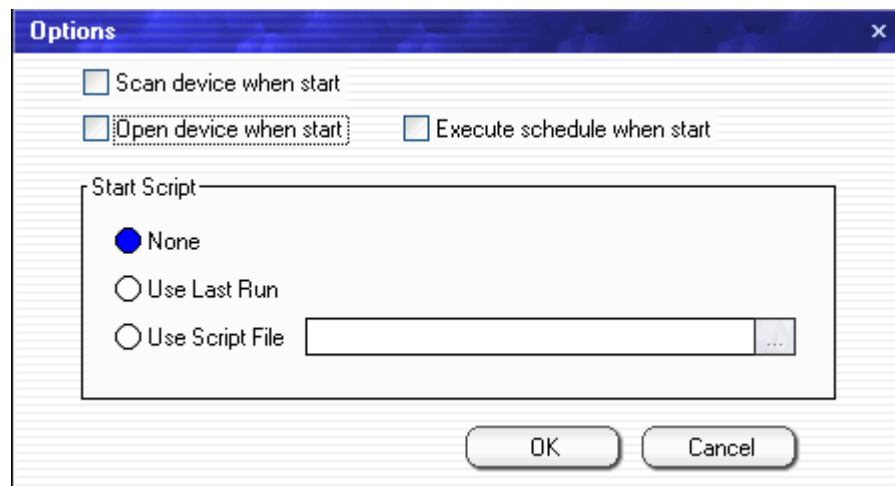


: Export template. Export current config as template.

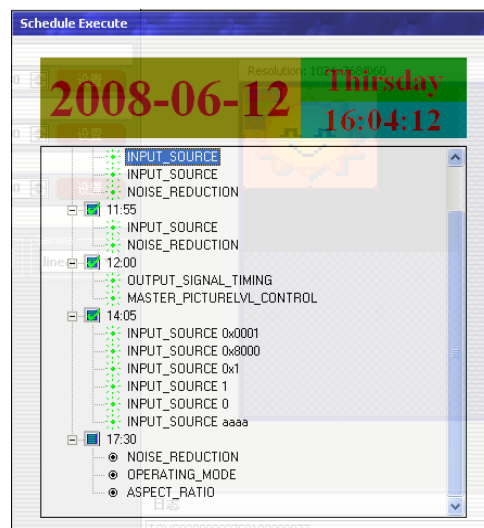


: Option: User can choose open device when start and using script saved before or execute schedule edited before when start.

If user choose open device when start, user can use last run, use script file or none when user start. User can click  to choose which script user want to open.



If user choose execute schedule when start, the next dialogue will display when software run.



## 5. Communication Software Guideline

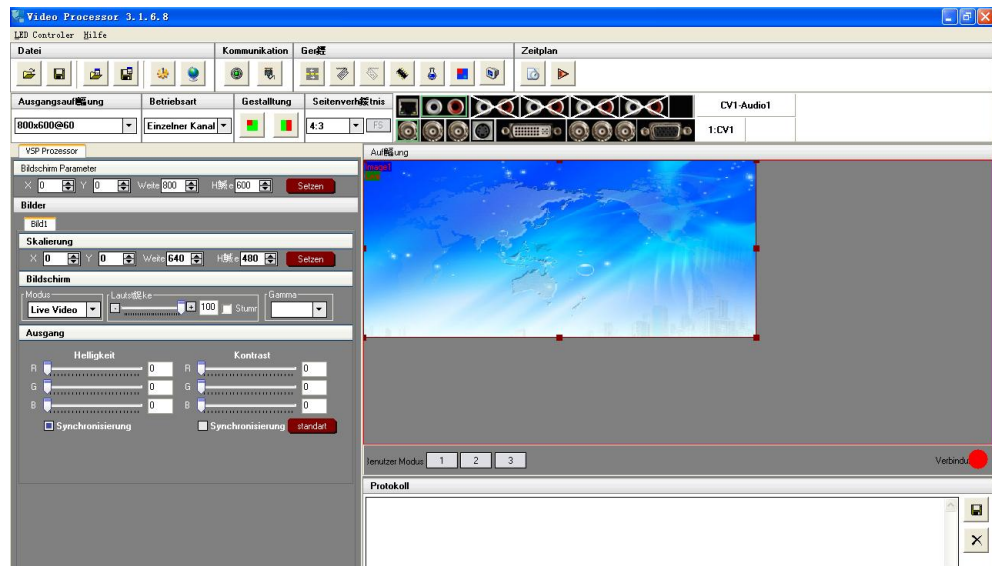
### Software Operation



: Language: The software supports Chinese, English and German version.



The picture following is the German dialogue.



: Exit

### Communication Toolbar



: Open COM.



: Close COM



: Set COM.

### Device Toolbar



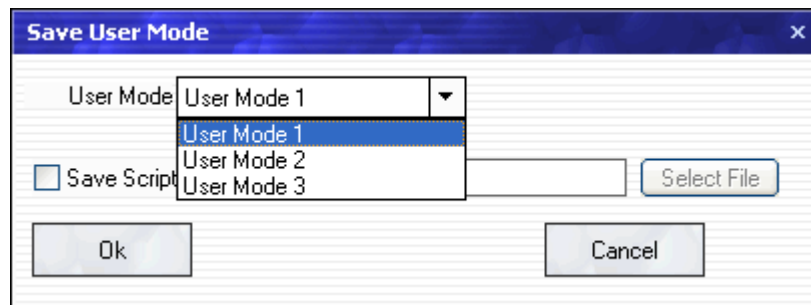
: Synchronization.

## 5. Communication Software Guideline

### Software Operation



: Save to flash.

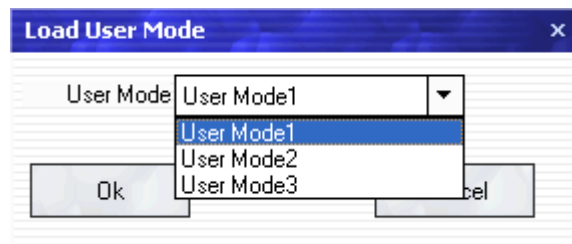


#### Note

Same as MENU → SAVE SETUP → SAVE  
TO or the same as the SAVE/PIP1 key.



: Load form Flash.



#### Note

Same as MENU → SAVE SETUP → LOAD  
FROM or same as the LOAD/PIP2 key.



: Factory setup.



: Advance.



#### Note

Advance is only done by engineer. Please  
connect us for password.

## 5. Communication Software Guideline

### Software Operation



: Audio patterns, can choose audio input source for IMAGE A or IMAGE B.

#### Note

Same as MENU → AUDIO → AUDIO IN.



: VGA adjustment.

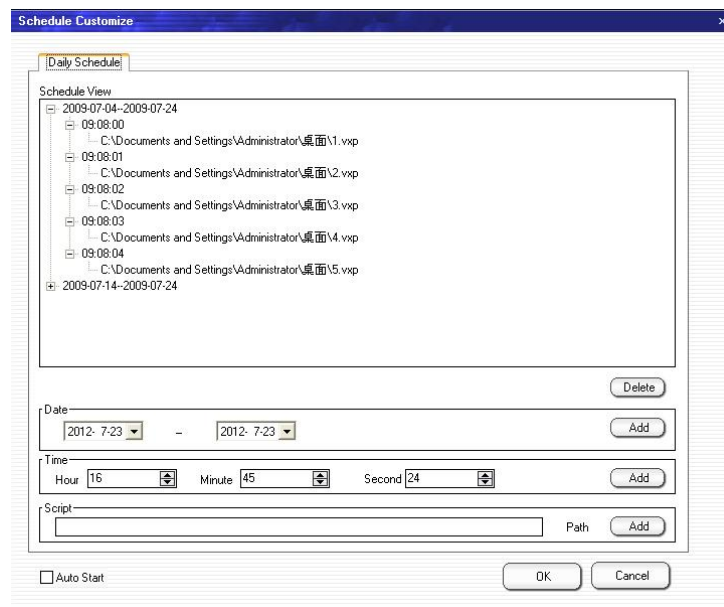
#### Note

Same as MENU → INPUT → VGA  
ADJUST.

## Schedule Toolbar



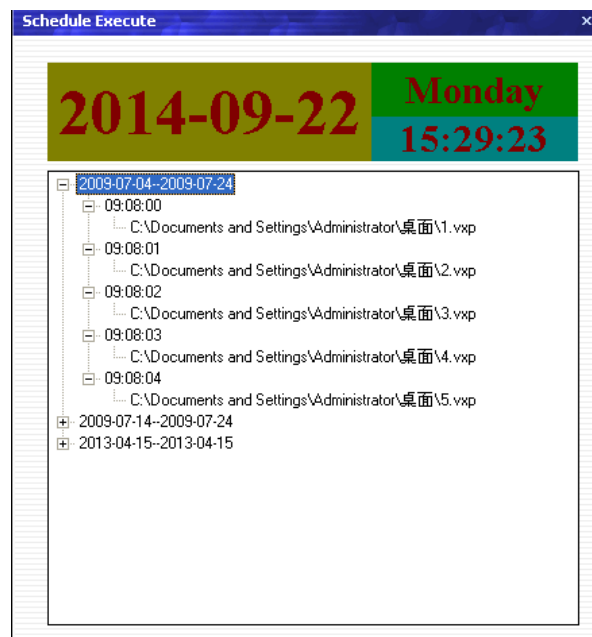
: Customize schedule.



: Execute schedule. Execute tasks according to schedule.

## 5. Communication Software Guideline

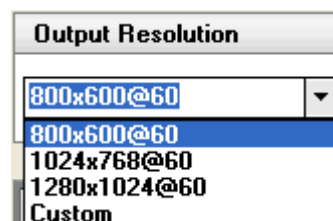
### Software Operation



### Output Resolution Toolbar

User can choose different output resolution by selecting from pull down list.

VSP 516S has 22 output resolutions for users selection.



#### Note

Same as MENU → OUTPUT → FORMAT OUT.

### Images Display Mode Toolbar

Choose to work in single channel or dual channel.



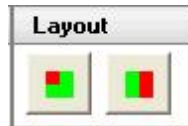
### Layout Toolbar

## 5. Communication Software Guideline

### Software Operation

If in single channel mode, the dialog is in grey and it is in limited use.

If in dual channel mode, user can set the device to work in PIP or PBP mode directly with quick preset layout button as following.

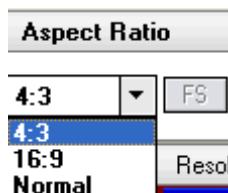


#### Note

Same as MENU → OUTPUT → PIP → LAYOUT.

### Aspect Ratio Toolbar

Users can select Normal, 4:3, 16:9 or Normal in the pull-down options.



#### Note

Same as MENU → OUTPUT → RATIO.

### Signal Input Toolbar

The white area displays the name of input interface when the mouse is over the interface picture on the left. The green pane means current selected interface.



When user selects a dual channel mode, select any channel image, click on the toolbar interface the ICONS for the channel selection input interface, i.e.: SDI, Composite1, Composite2, Composite3, S-Video, DVI, YPbPr, VGA, green toolbar says it has chosen the current interface for channel 1 input interface, the default last single channel chosen interface for channel

## 5. Communication Software Guideline

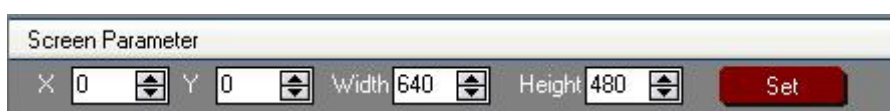
### Software Operation

2 input interface, the currently selected channel will be shown on the right side of the source.



### Screen Parameter Toolbar

User can set size and position of the screen simply, mainly applies to LED display users. After setting screen parameter, the user choice PIP or PBP operation, display picture can directly shows on corresponding screen.

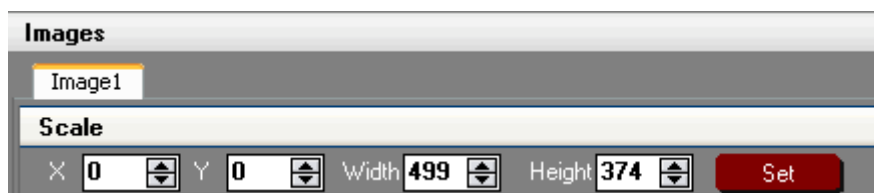


#### Note

Same as MENU → OUTPUT → SCREEN

### Image Toolbar

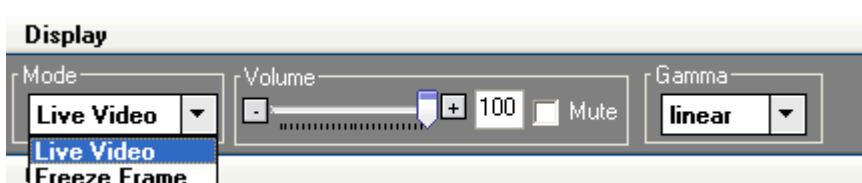
User can scale the images. Image 2 can't choose in single channel mode.



#### Note

Same as MENU → OUTPUT → SCALE , or  
SCALE/CROP key.

### Display Toolbar



Display toolbar Users can set Alpha value of “Live Video” and “Freeze Frame” through display toolbar. When it is in Live Video, the video plays



## 5. Communication Software Guideline

### Software Operation

properly; when it is in freeze frame, the video stop playing.

#### Note

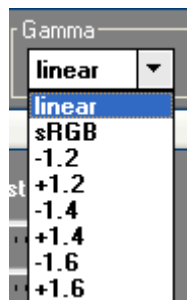
Same as MENU → OUTPUT → DISPLAY  
MODE → MODE or FREEZE key.

Through the volume toolbar users can adjust the volume of audio, or mute.

#### Note

Same as MENU → AUDIO →  
MUTE/VOLUME.

Setting Gamma is generally not recommended, since LED display with Gamma function. For further information, users can contact with our customer service team.

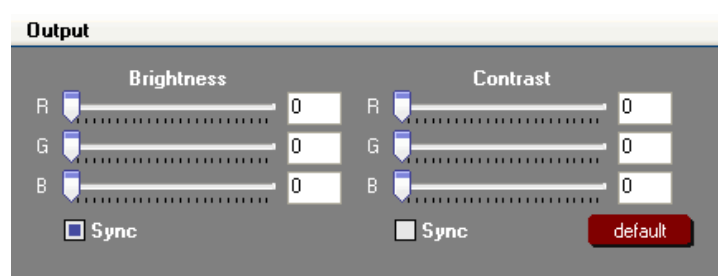


#### Note

Same as MENU → OUTPUT → GAMMA

## Output Image Setup Toolbar

User can customize the brightness and the contrast.



## 5. Communication Software Guideline

### Software Operation

#### Note

Same as MENU→ OUTPUT→ PICTURE.

### Images Display Toolbar

User can customize image or images position and size just by drag and drop image (images) in this area. This process is sync to the parameters in images toolbars.



### User Mode Toolbar

Users can recall the saved user mode1, mode2 or mode3.

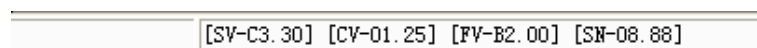


### Log Toolbar

User can save or delete the operate log file.

### Information Toolbar

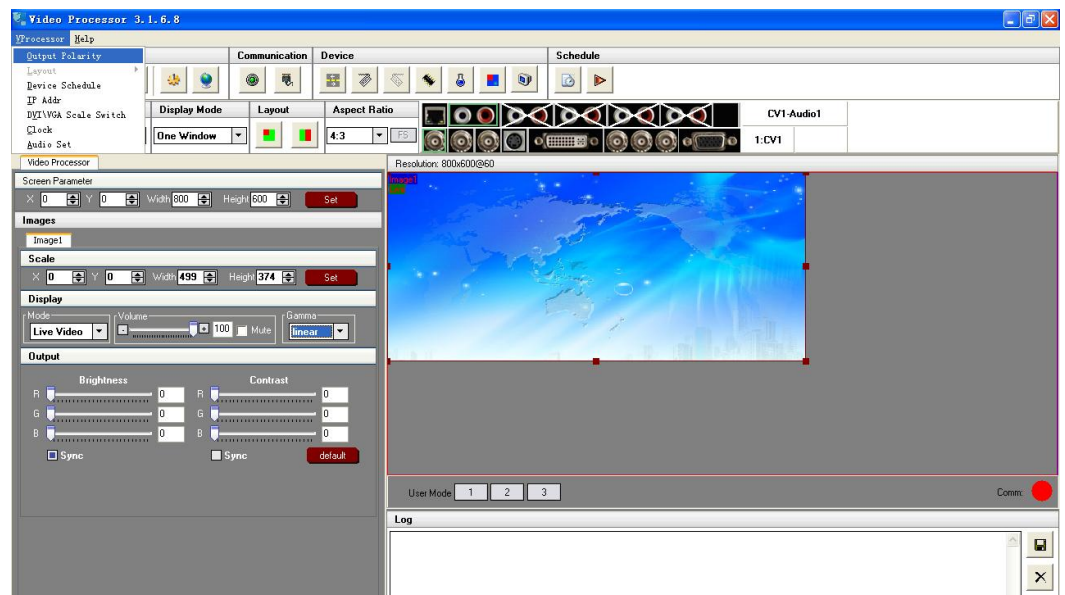
It is the VSP 516S software version, core board version, firmware version and the serial number in bottom of the software interface.



## 5. Communication Software Guideline

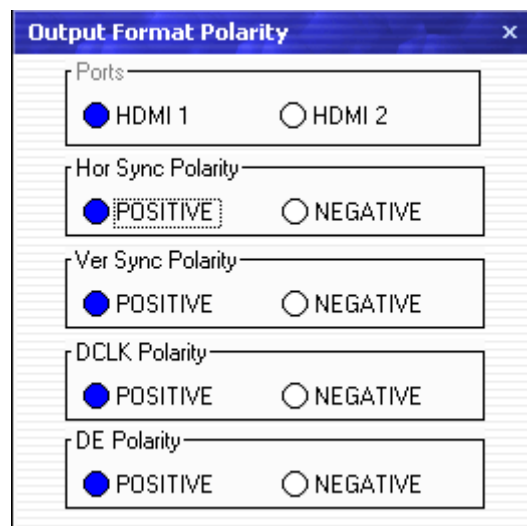
### Software Operation

#### [Video Processor] Options



#### Output Format Polarity:

User can choose the ports, and set the Hor Sync Polarity, Ver Sync Polarity, DCLK Polarity and DE Polarity.



Split function, choose “ON” can set H total, V total, H position, V position, H size and V size.

#### Note

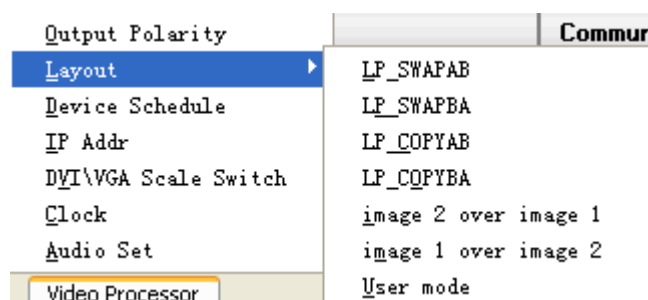
Same as MENU → SPLIT.

#### Layout:

Through the layout of the user can set a variety of double-picture mode.

## 5. Communication Software Guideline

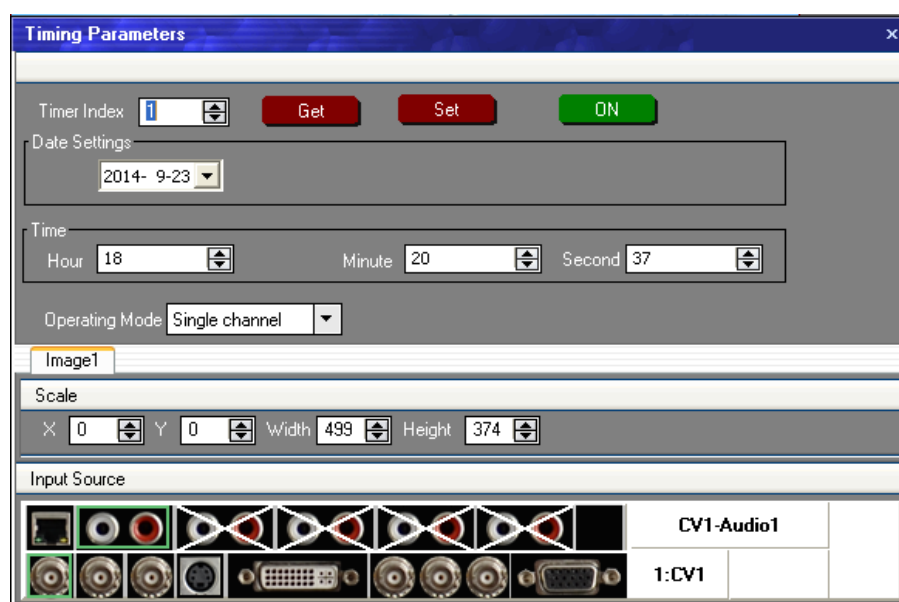
### Software Operation



#### Device Schedule:

Users can set up VSP 516S to play the appointed input video automatically in time and operation of single or dual channels, ratio place.

Users can setup up to 10 timing operation in the schedule.



#### IP Address:

Users can set equipment IP, usually used under the condition of one computer control or remote control several computers. It takes effect immediately after users change IP through serial port; and when users change IP through network, it takes effect after reopen the software.

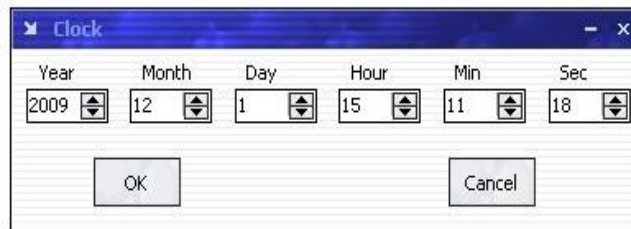


## 5. Communication Software Guideline

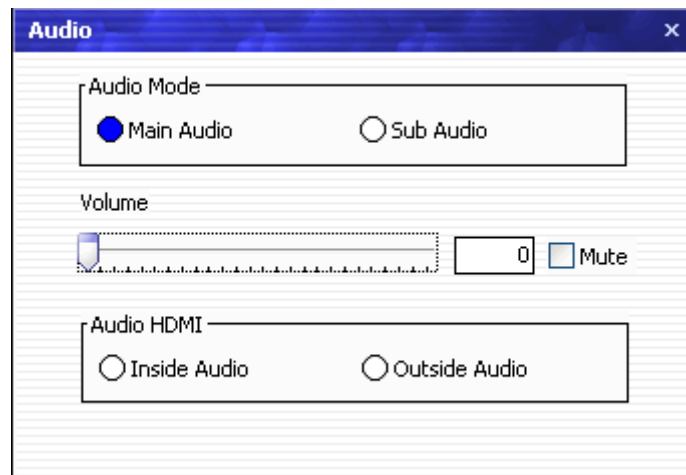
### Software Operation

#### Clock:

Users can set or adjust lower computer time through "clock"



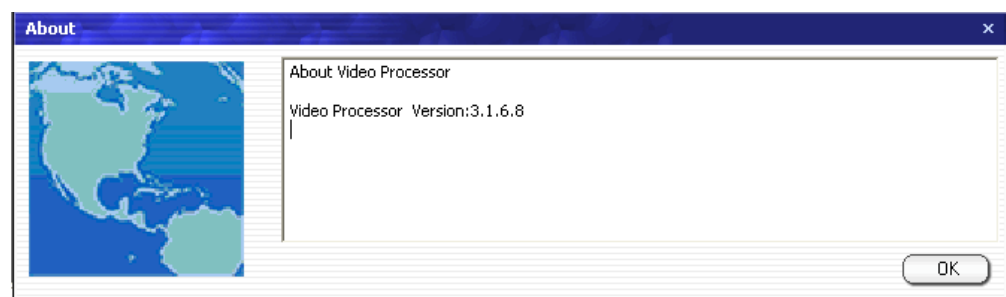
#### Audio setting:



### [Help] Options

**Version History:** The update of software.

**About:** The information of the software version.



## 5. Communication Software Guideline

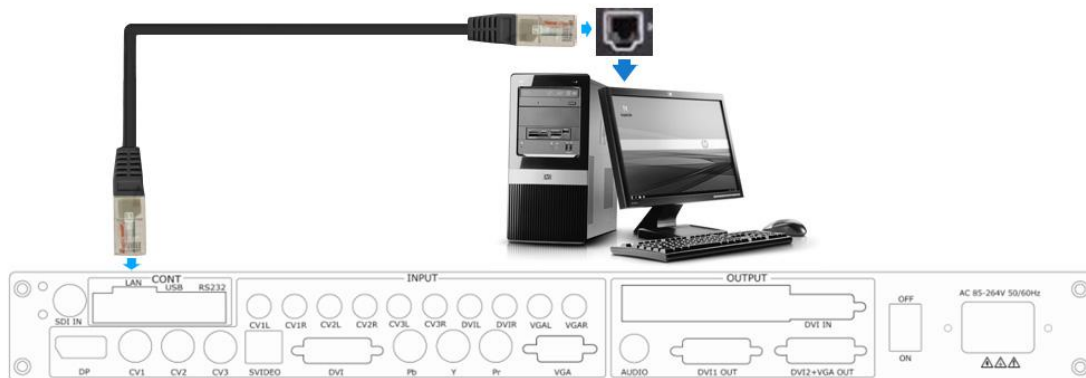
How to Connect Windows Control Program by LAN Interface

### How to Connect Windows Control Program by LAN Interface

First, install the upper computer software in the computer;

Connect VSP 516S and computer with cable, the connection diagram is as follows:


Version 1: VSP 516S with audio:



Version 2: VSP 516S with two sending cards:

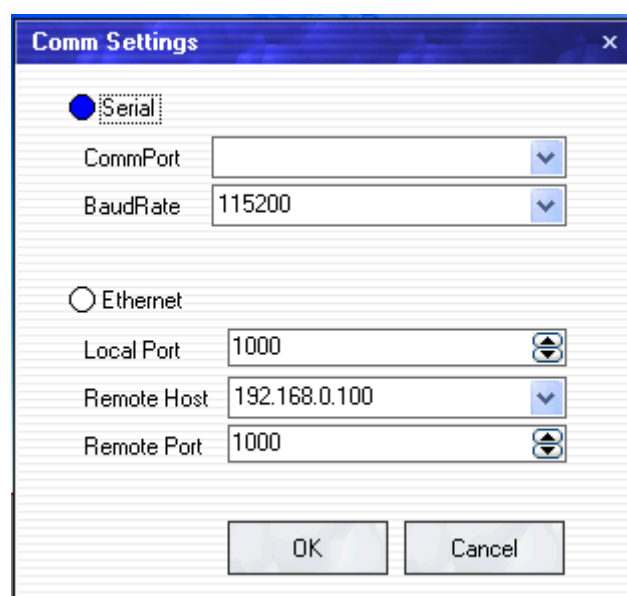


Power on VSP 516S, start the network function, specific steps are as follows: MENU--SYSTEM -- ETHERNET -- NETWORK, select ON, and check the IP address of the equipment, confirm if it is consistent with the computer, such as 192.168.0.\*\*\*, take 192.168.0.100 for example.

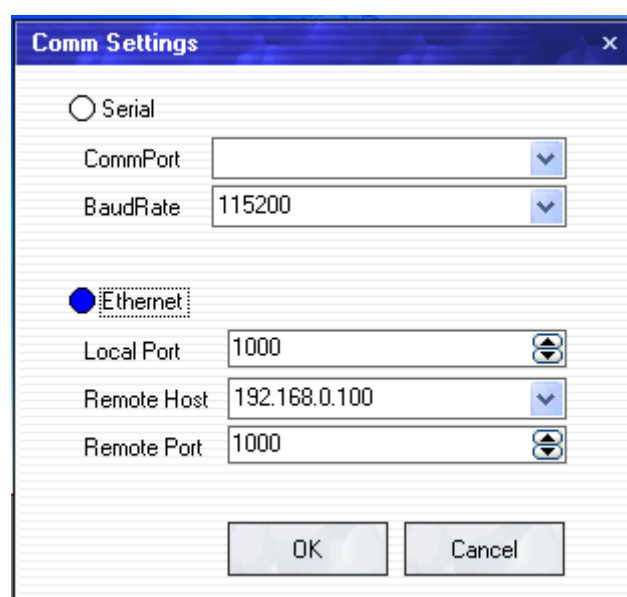
Open the upper computer software, click , interface is shown as follows:

## 5. Communication Software Guideline


How to Connect Windows Control Program by LAN Interface



Choose [Ethernet].



Input IP address, click [OK].

Click  to open the serial port, check the if the [Comm] icon in the lower-right corner of the control software interface is green, and log outputs information smoothly, then it can control the device through PC software.

## 5. Communication Software Guideline

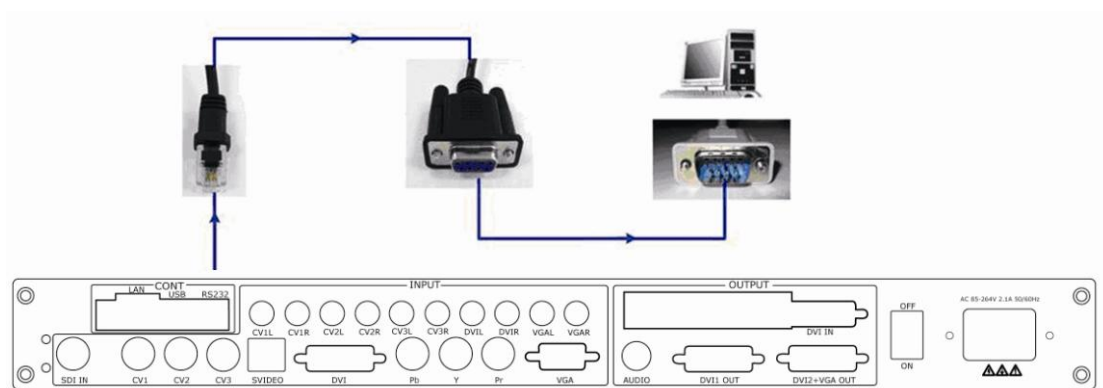
How to Connect Windows Control Program by RS232 Interface

### How to Connect Windows Control Program by RS232 Interface

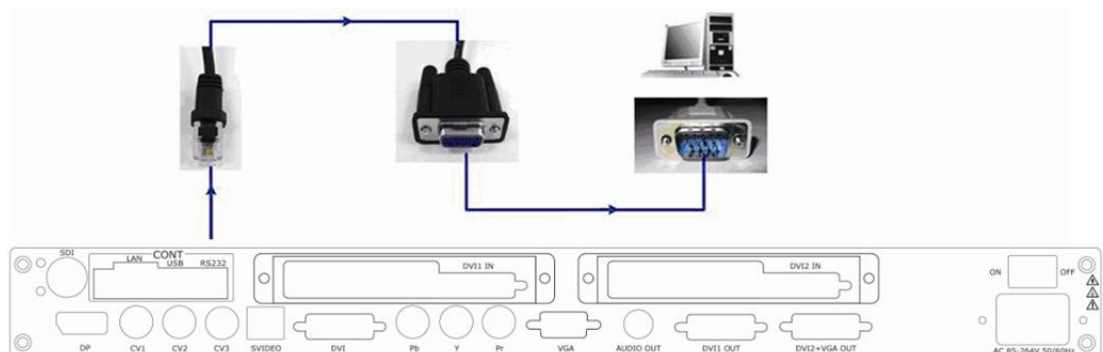
Firstly, install the control software in your PC.

Take out the RS 232 cable as following (RS-232, with 9-pin on one end, RJ 11 on the other side). Connect one side of the RJ11 download line to the RS232 on the video processor VSP 516S, and the other side to be connected to the serial port on the PC.

Version 1: VSP 516S with audio:



Version 2: VSP 516S with two sending cards:

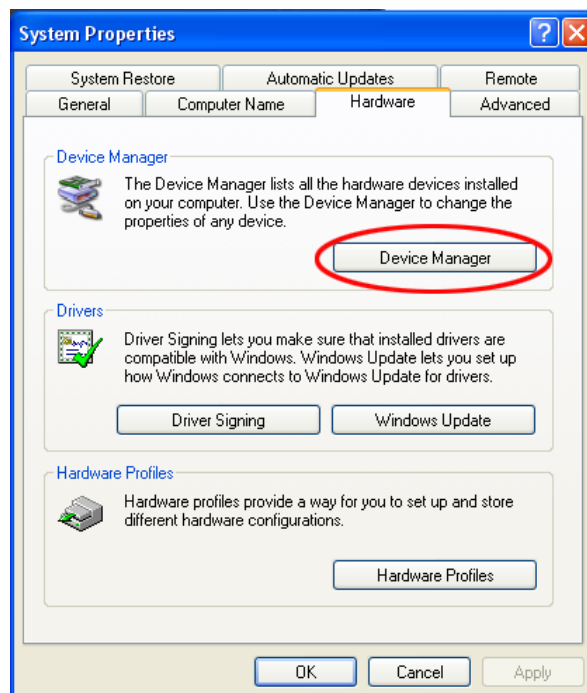


There is no any serial port on your PC, it need another Serial to USB adapter. Connect one end of the RJ11 download line to the RS232 on the video processor. Connect the end of USB-side to the PC. Ensure the cable connection is good. Turn on the Video Processor VSP 516S. Right click the [My Computer] on the home screen of control PC. Enter [Attribute], Find [Hardware] option, as following:



## 5. Communication Software Guideline

How to Connect Windows Control Program by RS232 Interface



Click [Device Manager] “+” on the left, check the COM number, as following,  
**COM1 is offered.**



Remember the COM you are using and then run the control software, find

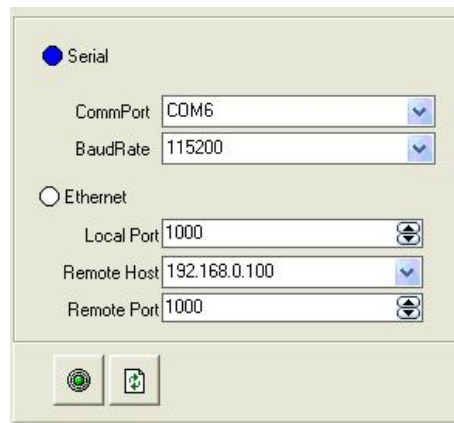
[Communication] option. In default, first time user have to click




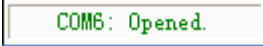
button, as following:

## 5. Communication Software Guideline



How to Connect Windows Control Program by RS232 Interface



Check and tap [Serial], Serial Port , for example, is **COM6** which is checked from device manager. Set VSP 516S Boud Rate to be :115200. Click [Confirm] after setting.

Click  [open serial], check if [COM] icon is on the bottom right corner, when there is the prompt green  showing on the software, it means the communication is ok , and you can use the software to control the device now.

Note

If power off during communication, should close the port , by first, and plug in out of the USB  and do communication.

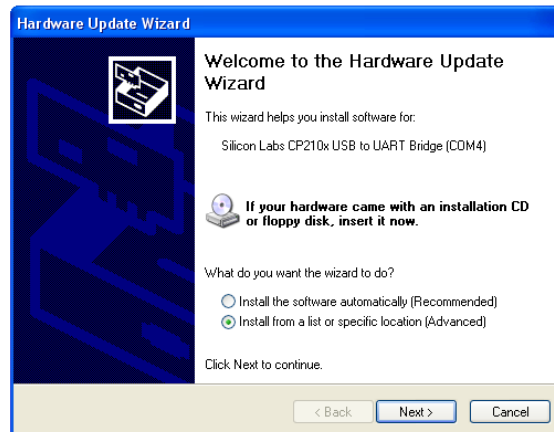
## 5. Communication Software Control Guide

How to Connect Windows Control Program by USB Interface

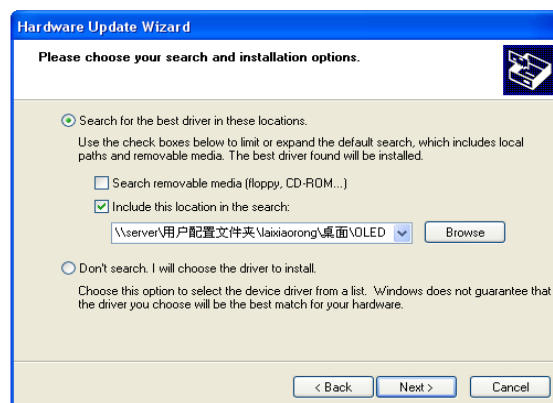
### How to Connect Windows Control Program by USB Interface

Install the driver.

Connect the USB cable to the PC and the video processor. Turn on the VSP 516S, for the first time to use USB, the PC will remind finding the new hardware and ask to install the driver for this new driver:



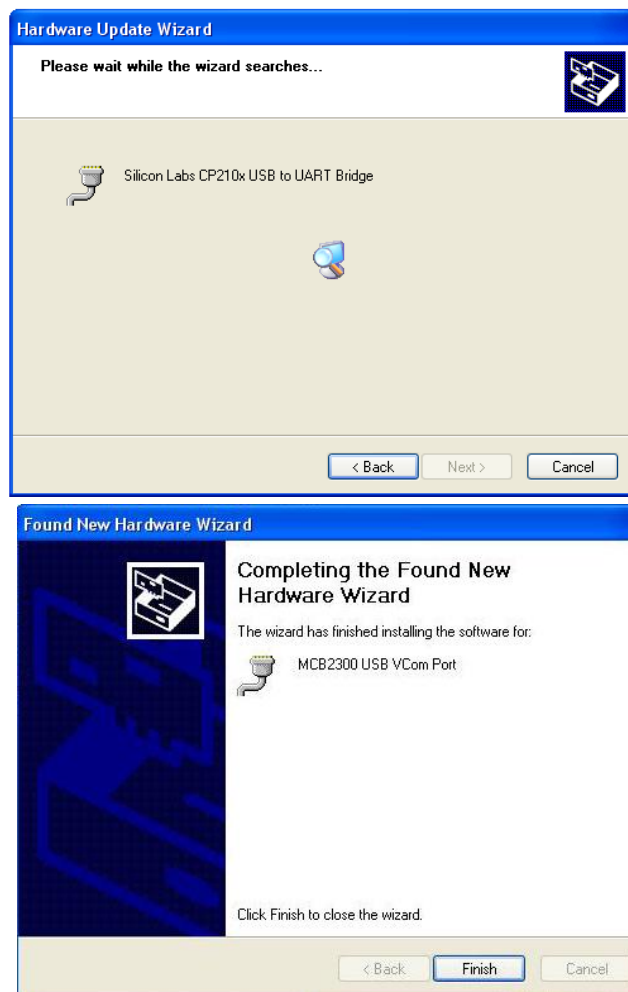
Install from the list or specified location, press “NEXT”:



Press “browser” to find the driver, and press “NEXT”:

## 5. Communication Software Control Guide

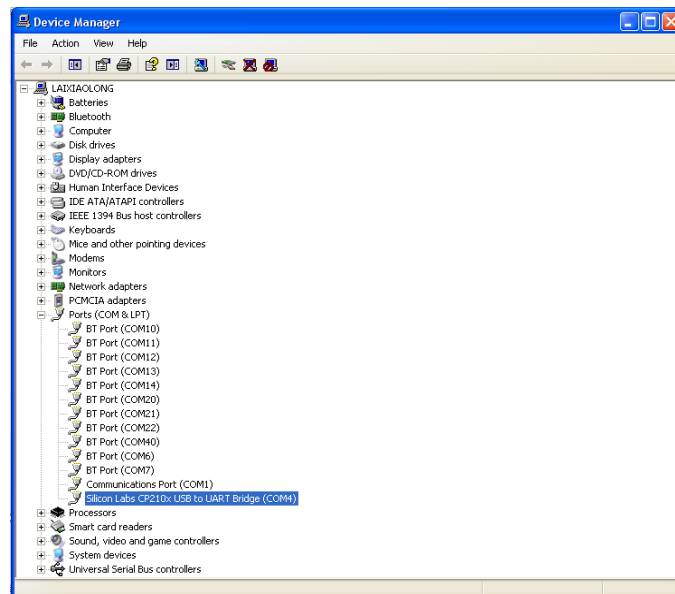
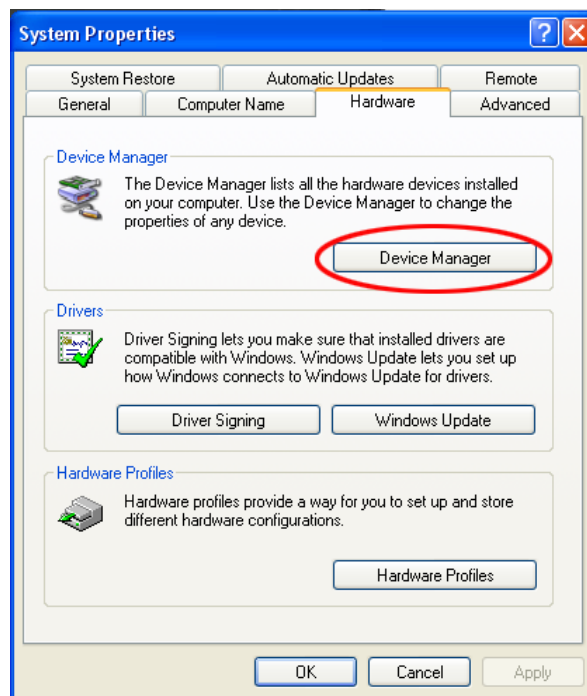
How to Connect Windows Control Program by USB Interface



When the installation finish, can go to check the installed COM port inside the device management, as following picture shows:

## 5. Communication Software Control Guide

How to Connect Windows Control Program by USB Interface

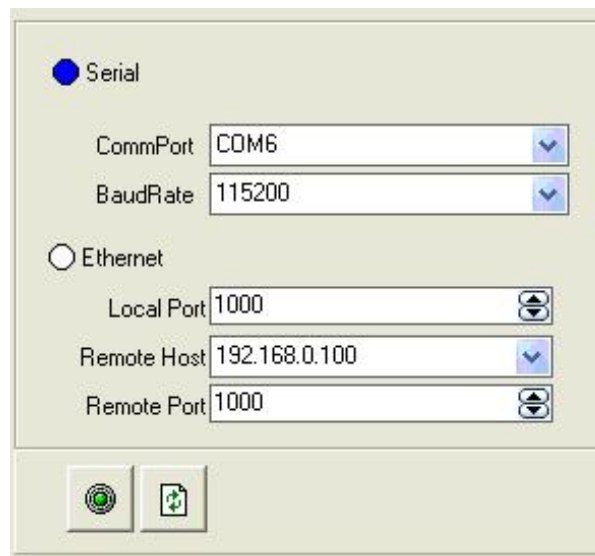



Install the console software, and run after install, shows the interface of the console as following:

Select the COM as installed just now, and set the VSP 516S Boud Rate to be: 115200.

## 5. Communication Software Control Guide

How to Connect Windows Control Program by USB Interface



Press  to start communication, when there is green point in the right down corner showing on the software, it means the communication is ok, and user can use the software to control the device now, the software operation is the same as VSP 516S.

## 6. System Setup and Operations

---

### In This Chapter

This chapter provides comprehensive instructions for system setup and operations. The following topics are discussed:

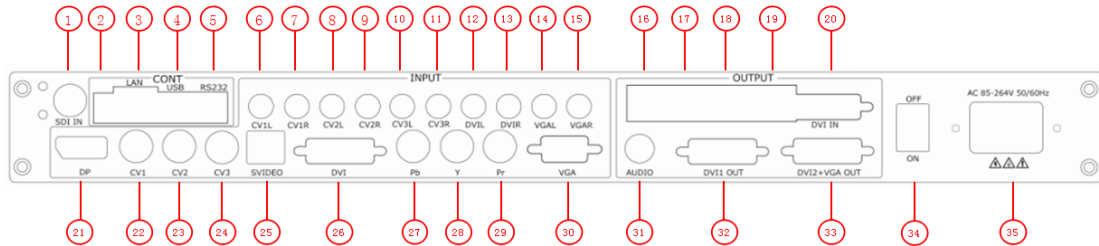
- [Interface and Input Signal Option](#)
- [How to Change the Language](#)
- [How to Do Customized Output Resolution](#)
- [How to Realize Single Image Switching](#)
- [How to Set up the PIP](#)
- [How to Set up the Size and Position of the Single Image](#)
- [How to Set up Image Zoom](#)
- [How to Realize the Screen Size and Full Size Switching](#)
- [How to Realize the Freeze and the Live Image Switching](#)
- [How to Realize the Text Overlay Setting](#)
- [How to Set up the Volume](#)
- [How to Set up the Playlist](#)
- [How to Use Black Out](#)
- [How to Save the Parameter](#)
- [How to Load the Saved Parameter](#)
- [How to Achieve Multiple Cascade](#)

## 6. System Setup and Operations

### Interface and Input Signal Option

#### Interface and Input Signal Option

VSP 516S Back Panel with audio:



NO	INTERFACE	NO	INTERFACE
1	3G-SDI input BNC CVBS port	25	S-Video DIN 4
2	Dial the code switch	26	DVI Input DVI-I
3.16.17	10/100M Interface RJ45	27~29	YPbPr Input
4.19	USB Interface	30	VGA Input DB15 port
5	RS232 Interface	31	Audio Output
6~15	Audio Input	32	DVI Output DVI-I
18	Power supply port of Sending Card	33	DVI+VGA DVI-I Output
20	DVI input port of sending card	34	Switch and Power
21	Displayport Input	35	Power IEC-3 port
22~24	CVBS Input BNC port		

**32.** DVI1 output , use for connecting the sending card of LED display.

VSP 516S support resolution format as following:

800×600×60, 1024×768×60, 1024×768×75, 1280×720×50, 1280×720×60,  
1280×768×60, 1280×800×60, 1280×1024×60, 1360×768×60,  
1366×768×60, 1400×1050×60, 1440×800×60, 1440×900×60,  
1600×1200×60, 1680×1050×60, 1920×1080×50, 1920×1080×60,  
1920×1120×60, 1920×1200×60, 2048×1152×60, 2560×812×60,  
2560×816×60.



## 6. System Setup and Operations

### Interface and Input Signal Option

#### Note

Same as MENU → OUTPUT → OUTPUT  
FORMAT

**33.** DVI2 + VGA output, output DVI video signal or VGA video signal, connect the display or other device with DVI or VGA interface, and output the signal by DVI-I interface. Support resolution format as following:

800×600×60, 1024×768×60, 1024×768×75, 1280×720×50, 1280×720×60, 1280×768×60, 1280×800×60, 1280×1024×60, 1360×768×60, 1366×768×60, 1400×1050×60, 1440×800×60, 1440×900×60, 1600×1200×60, 1680×1050×60, 1920×1080×50, 1920×1080×60, 1920×1120×60, 1920×1200×60, 2048×1152×60, 2560×812×60, 2560×816×60.

In addition to CONT part and send card and power interface outside, other interface for video signal input interface.

**CVBS (BNC Port)** Can receive standard video signal from players, cameras etc. Input supported resolution 480i and 576i via BNC. Supported standards include: PAL, NTSC and SECAM.

**S-Video (DIN 4 Port)** Can used to input S-Video signal.

**DVI (DVI-I Port)** Computer graphics interface may receive the DVI output interface can also through the DVI turn HDMI cable to connect the computer graphics HDMI output or DVD HDMI output.

**YPbPr (BNC Port)** Can support DVD player, video signal. Through the BNC × 3 this equipment component interface, as the Pb, Y, Pr.

**VGA (DB15 Port)** Can support HD player, computer, video signal. Through the DB15 interface input signal.

**Displayport interface:** Input the video signal from HD player, computer, input signal via displayport interface.

**3G-SDI (BNC Port)** Can receive video signal from HD player and radio

## 6. System Setup and Operations

### Interface and Input Signal Option

processing equipment, connect SDI interface via 75 ohms BNC port.

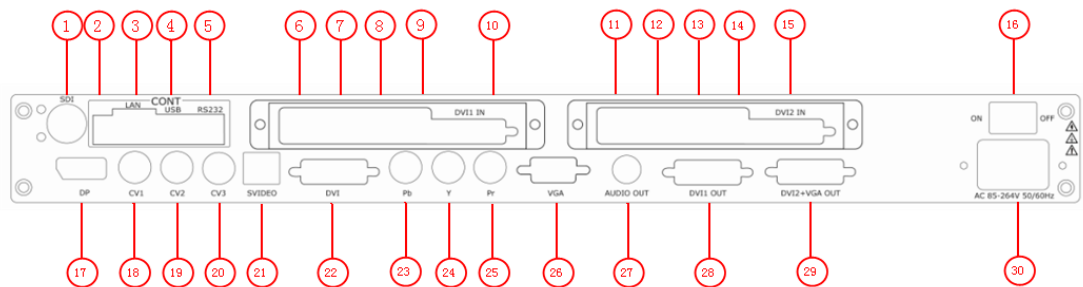
**34. Power:** Power is supplied for video processor.

**35. AEC Port:** AC 85-264V 3.8A 50/60Hz IEC-3 Power Interface.

# 6. System Setup and Operations

## Interface and Input Signal Option

VSP 516S back panel with two sending cards.



NO	INTERFACE	NO	INTERFACE
1	3G-SDI input BNC CVBS port	18~20	CVBS Input BNC port
2	Dial the code switch	21	S-Video DIN 4
3.6.7.11.12	10/100M Interface RJ45	22	DVI Input DVI-I
4.9.14	USB Interface	23~25	YPbPr Input
5	RS232 Interface	26	VGA Input DB15 port
8.13	Power supply port of Sending Card	27	Audio Output
10.15	DVI input port of sending card	28	DVI Output DVI-I
16	Switch	29	DVI+VGA DVI-I Output
17	Displayport Input	30	Power IEC-3 port

**28.** DVI1 output , use for connecting the sending card of LED display .

VSP516S support resolution format as following:

800×600×60, 1024×768×60, 1024×768×75, 1280×720×50, 1280×720×60,  
1280×768×60, 1280×800×60, 1280×1024×60, 1360×768×60,  
1366×768×60, 1400×1050×60, 1440×800×60, 1440×900×60,  
1600×1200×60, 1680×1050×60, 1920×1080×50, 1920×1080×60,  
1920×1120×60, 1920×1200×60, 2048×1152×60, 2560×812×60,  
2560×816×60.

### Note

Same as MENU → OUTPUT → FORMAT

## 6. System Setup and Operations

### Interface and Input Signal Option

**29. DVI2 + VGA output,** output DVI video signal or VGA video signal, connect the display or other device with DVI or VGA interface, and output the signal by DVI-I interface. Support resolution format as following:

800×600×60, 1024×768×60, 1024×768×75, 1280×720×50, 1280×720×60, 1280×768×60, 1280×800×60, 1280×1024×60, 1360×768×60, 1366×768×60, 1400×1050×60, 1440×800×60, 1440×900×60, 1600×1200×60, 1680×1050×60, 1920×1080×50, 1920×1080×60, 1920×1120×60, 1920×1200×60, 2048×1152×60, 2560×812×60, 2560×816×60.

In addition to CONT part and send card and power interface outside, other interface for video signal input interface.

**CVBS (BNC Port)** Can receive standard video signal from players, cameras etc. Input supported resolution 480i and 576i via BNC. Supported standards include: PAL, NTSC and SECAM.

**S-Video (DIN 4 Port)** Can used to input S-Video signal.

**DVI (DVI-I Port)** Computer graphics interface may receive the DVI output interface can also through the DVI turn HDMI cable to connect the computer graphics HDMI output or DVD HDMI output.

**YPbPr (BNC Port)** Can support DVD player, video signal. Through the BNC × 3 this equipment component interface, as the Pb, Y, Pr.

**VGA (DB15 Port)** Can support HD player, computer, video signal. Through the DB15 interface input signal.

**Displayport interface:** Input the video signal from HD player, computer, input signal via displayport interface.

**3G-SDI (BNC Port)** Can receive video signal from HD player and radio processing equipment, connect SDI interface via 75 ohms BNC port.

**16. Power:** Power is supplied for video processor.

**30. AEC Port:** AC 85-264V 3.8A 50/60Hz IEC-3 Power Interface.

## 6. System Setup and Operation

### How to Change the Language

#### How to Change the Language

1. Push the [MENU/EFFECT] button, and enter to the menu items.

```
>INPUT          >>
OUTPUT          >>
TRANSITION      >>
AUDIO           >>
```

2. Turn the knob, choose [LANGUAGE 语言].

```
SPLIT          >>
SAVE SETUP     >>
SYSTEM         >>
>LANGUAGE 语言 中文
```

3. Push the knob to confirm, change the status of option ">" to "\*".

```
SPLIT          >>
SAVE SETUP     >>
SYSTEM         >>
*LANGUAGE 语言 中文
```

4. Turn the knob again, change "Chinese" to "EN".

```
SPLIT          >>
SAVE SETUP     >>
SYSTEM         >>
*LANGUAGE 语言 EN
```

5. After finishing, push the knob to confirm, and the language on OLED panel has been changed to English.

```
SPLIT          >>
SAVE SETUP     >>
SYSTEM         >>
>LANGUAGE 语言 EN
```

6. The same operation, change the language from Chinese to English.

## 6. System Setup and Operation

### How to Do Customized Output Resolution

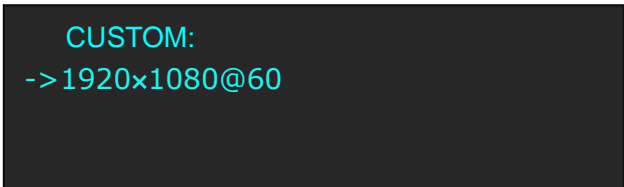
#### How to Do Customized Output Resolution

Push the [MENU/EFFECT] button to enter the menu items, turn the knob and choose [OUTPUT], push the knob to confirm. Turn the knob, choose [OUTPUT FORMAT], push knob to confirm and go into the output format menus, OLED module show as following:

**STANDARD--Standard resolution.**


**CUSTOM--Used defined resolution setting.**

Push knob and go into <CUSTOM> menu:



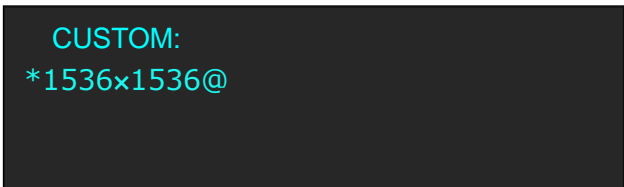
CUSTOM:  
->1920x1080@60

Turn knob on each digital position, and change the value of the digital by the digital buttons on the front panel. For example, input 1536 as following:



CUSTOM:  
\*1536x

After the digital, push Knob will add \*, means before the \* is the horizontal size. Same operation for vertical size, for example input 1536 as following:



CUSTOM:  
\*1536x1536@

After the digital, push the Knob will add @, means before the @ is the vertical size, and after the @ is the refresh rate. Only digital 50 or digital 60 supports for the refresh rate. Use the digital buttons to finish the settings, .

For example to input refresh rate 60.

## 6. System Setup and Operation

### How to Do Customized Output Resolution

CUSTOM:  
\*1536x1536@60

After input all the values, push knob to enable VSP 516S to output this resolution. VSP 516S will take 5 to 10 seconds to enable this output resolution.

#### Note

All the resolution inside the value 2048 x 1152 x 60 = 141557760 can support.

For example:

- 1)  $1536 \times 1536 \times 60 = 141557760$  is OK.
- 2)  $2560 \times 1536 \times 60 = 235929600$  is too big, can not support.
- 3)  $2560 \times 1152 \times 50$  is OK.

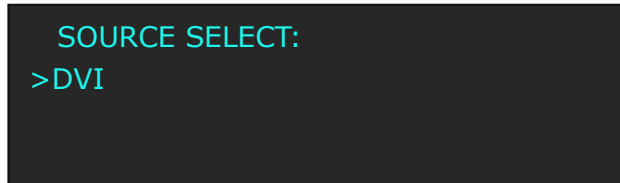
## 6. System Setup and Operation

### How to Realize Single Image Switching

---

#### How to Realize Single Image Switching

Boot the system default CV1 to the current input source, if need seamless switching other source such as DVI, push DVI button, OLED module show as follows:



CV1 button light turns off after pushing DVI button. DVI button light is on if the DVI signal is effective and stable. And if the DVI signal is invalid or no input, DVI button light will flash.

The same method can switch the signals among CV2, CV3, SVID, YPbPr, VGA, SDI and DP.

#### Note

Only cut switching is supported among the switch of CV1, CV2 and CV3.



## 6. System Setup and Operation

How to Set up the PIP.

### How to Set up the PIP

Push the [SAVE/PIP1] or [LOAD/PIP2] button for two times, button led light turn on, and enter the PIP function menu. OLED module show as follows:

```
>PIP          ON
LAYOUT        PIP L+T
SWAP IMAGE    OFF
ALPHA         0
```

LAYOUT: Can choose PIP layout, the corresponding results are as follows:

PIP L+T



PBP L+R



PBP T+B



SWAP IMAGE: It can set PIP to swap exchange, when choose ON, it can realize the IMAGE A and IMAGE B exchange.

ALPHA: Can set the image transparency, the regulating range is among 0 to 16.

SELECT: Can choose to set the size or position of IMAGE A or IMAGE B individually.

#### Note

User can also select IMAGE A or IMAGE B by [IMAGE1/IMAGE2] reuse button.

## 6. System Setup and Operation

How to Set up the Size and Position of the Single Image

### How to Set up the Size and Position of the Single Image

Push the [SCALE/CROP] button, and enter the scale function menus, the OLED module show as follows:



The lights of number button 0~9 turn on, user can adjust the following items by knob or number buttons.

H SIZE: Width setting.

V SIZE: Height setting.

H POS: Horizontal phase setting.

V POS: Vertical phase setting.

RESET: If image quality distorts by improper operation, it can be recover by reset.

## 6. System Setup and Operation

### How to Set up Image Zoom

---

#### How to Set up Image Zoom

The image can be zoom in horizontal or vertical separately, to meet the special effects required.

Push the [MENU/EFFECT] button to go into the menu items, turn the knob and choose [INPUT], push the knob to confirm. Turn the knob, and choose "ZOOM", show the menus as following:

**V UP**--Zoom in vertical and the image will be zoom in to the top direction from its bottom.

**V DOWN**--Zoom in vertical and the image will be zoom in to the down direction from its top.

**V UP/DOWN**--Zoom in vertical but in both top and down direction from its middle.

**H LEFT**--Zoom in horizontal and the image will be zoom in to the left direction from its right.

**H RIGHT**--Zoom in horizontal and the image will be zoom in to the right direction from its left.

**H LEFT/RIGHT**--Zoom in horizontal but in both left and right direction from its middle.

**CENTER**--Zoom in 4 corner direction from center.

## 6. System Setup and Operation

How to Realize the Screen Size and Full Size Switching

### How to Realize the Screen Size and Full Size Switching

VSP 516S supports the screen parameters to meet the requirement where user want to switch between scale screen size and full display size (like monitor). This is only enable for a single display window. Following is an example of a screen size is 1408 x 832.

Operator can defined the VSP 516S output resolution from standard output resolution list or customized the output resolution which is higher than 1408 x 832. For this application 1440x900 is an example:

Push the [MENU/EFFECT] button to go into the menu items, turn the knob and choose <OUTPUT>, push the knob to confirm, then turn the knob and choose "SCREEN", push the knob and goes into the screen menus as following:

**H SIZE**--Horizontal pixels, turn knob or use the digital button to input the value 1408.

**V SIZE**--Vertical pixels, turn knob or use the digital button to input the value 832.

**H POS**--Horizontal position, default value is 0, set the value as the way of H SIZE and V SIZE.

**V POS**--Vertical position, default value is 0, set the value as the way of H SIZE and V SIZE.

**MODE**-- Mode option, choose SCREEN SIZE.

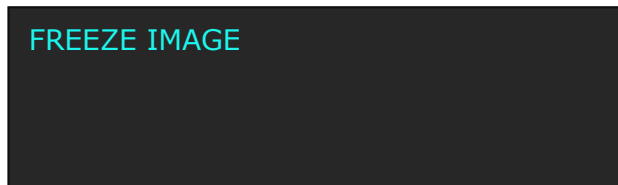


## 6. System Setup and Operation

How to Realize the Freeze and Live Image Switching

### How to Realize the Freeze and the Live Image Switching

1. Push the [FREEZE] button, and freeze the current image.



2. Push the [FREEZE] button again, the current freeze image is switched to live image:



#### Note

Use can set FREEZE IMAGE or LIVE IMAGE by  
MENU → OUTPUT → DISPLAY MODE →  
MODE

#### Note

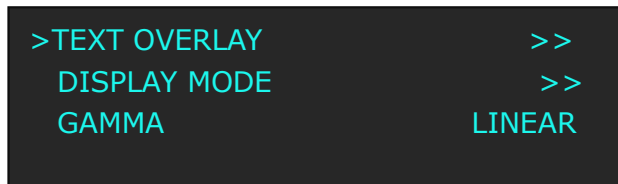
In PIP mode, IMAGE A and IMAGE B are freeze  
or live at the same time.

## 6. System Setup and Operation

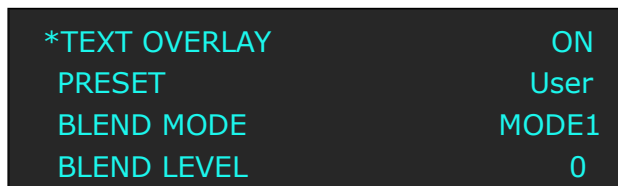
### How to Realize the Text Overlay Setting

#### How to Realize the Text Overlay Setting

1. Push the [MENU/EFFECT] button, turn the knob, choose [OUTPUT], push the knob to confirm, turn the knob, choose [TEXT OVERLAY] and enter to [TEXT OVERLAY] menu items, push the knob to confirm.



2. Turn the knob, choose "TEXT OVERLAY" option, choose ON, and enable the TEXT OVERLAY function.



3. Push the [MENU/EFFECT] button, return to [TEXT OVERLAY], turn the knob, OLED screen displays menu options, select 13 modes in PRESET, or select BLEND MODE, which includes two modes:  
Mode 1: Graphic content locate at the top and is non-transparent, background transparency is controlled by double-image transparency;  
Mode 2: Graphic content is controlled by double-image transparency, the background is completely transparent.  
Rotate the knob and choose the mode.
4. Push the [MENU/EFFECT] button, return to [TEXT OVERLAY], turn the knob, choose ABOVE/BELOW to select the layer position for IMAGE B.
5. Push the [MENU/EFFECT] button, return to [TEXT OVERLAY], turn the knob, choose BLEND LEVEL, and set the image display transparency, the regulating range is among 0 to 16.
6. Push the [MENU/EFFECT] button, return to [TEXT OVERLAY], turn the knob, choose the color value:

## 6. System Setup and Operation

### How to Realize the Text Overlay Setting

RED: The value range of color RED that to be set, regulating range between 0~255.

GREEN: The value range of color GREEN that to be set, regulating range between 0~255.

BLUE: The value range of color BLUE that to be set, regulating range between 0~255.

7. At the same time, user can view the effect through the screen to get a better setting.

**Note:** All the above settings are available only for IMAGE B.

## 6. System Setup and Operation

### How to Set up the Volume

In single image mode, the operations are as follows:

1. Push [MENU/EFFECT] to enter the menu items, turn the knob, choose [AUDIO], push the knob to confirm, turn the knob, and choose [MUTE].

```
>INPUT          >>
OUTPUT          >>
TRANSITION      >>
AUDIO           >>
```



```
*MUTE           ON
VOLUME          50
AUDIO IN        IMAGE A
HDMI            INTERNAL
```

2. Turn the knob, and choose "OFF", disable the mute function.

```
*MUTE           OFF
VOLUME          50
AUDIO IN        IMAGE A
HDMI            INTERNAL
```

3. Turn the knob, choose <VOLUME>, turn the knob to adjust the volume.

For example, turn the volume down to 20:

```
MUTE           OFF
>VOLUME        20
AUDIO IN        IMAGE A
HDMI            INTERNAL
```

In PIP mode, first, choose IMAGE A or IMAGE B as audio input source, specific steps are as follows:

MENU → AUDIO → AUDIO IN → IMAGE A/IMAGE B, or push the [IMAGE1/IMAGE2] button, choose IMAGE A or IMAGE B, then repeat the step1 to 3 above.



## 6. System Setup and Operation

How to Set up the Volume

### Note

Volume is adjustable only choose internal for HDMI.

## 6. System Setup and Operation


### How to Set up the Playlist

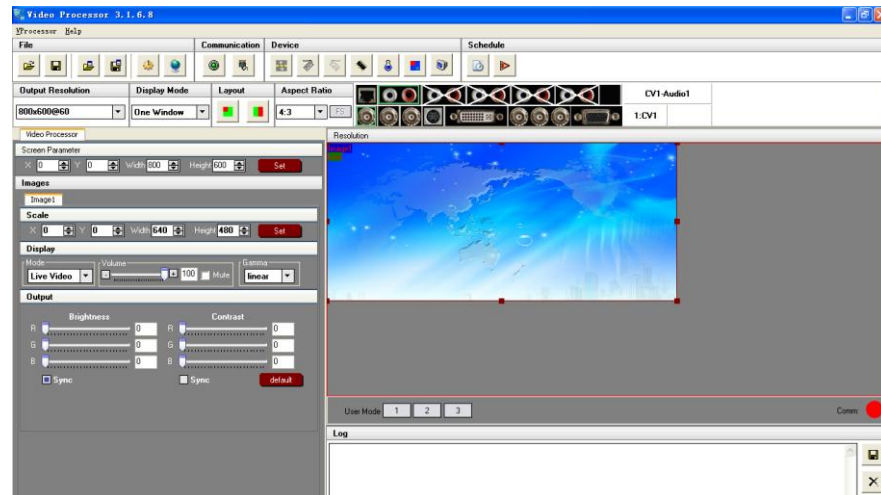
#### How to Set up the Playlist

Users can set up VSP 516S in “Device Schedule” in windows control program to play the appointed input video automatically in appointed time and operation of single or dual channels, and set up the ratio and position. Users can setup up to 10 timing operations in the schedule.

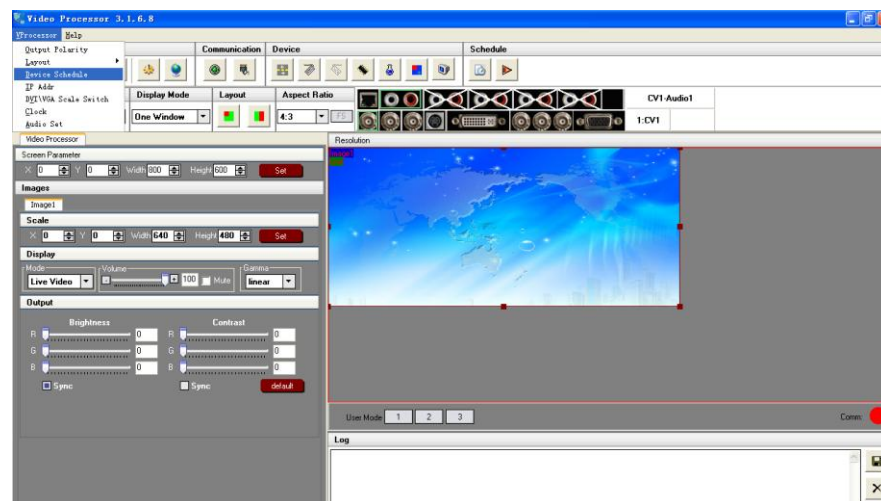
1. First, make sure the VSP 516S has been connected to windows control program.



2. Double click the VSP 516S software , software interface is shown as follows:



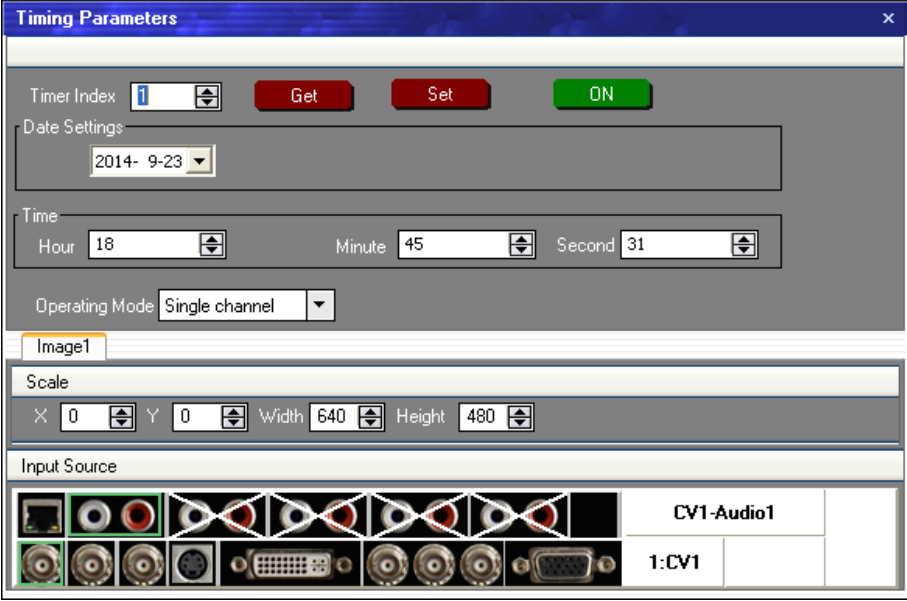
3. Click the [VP Processor] option on the top left, then show the drop-down menu as follows:



## 6. System Setup and Operation

### How to Set up the Playlist

4. Choose “Device Schedule” option in the drop-down menu:



The screenshot shows the 'Timing Parameters' window. At the top, there's a 'Timer Index' dropdown set to '1', with 'Get', 'Set', and 'ON' buttons. Below is 'Date Settings' with a date picker showing '2014- 9-23'. The 'Time' section has 'Hour' (18), 'Minute' (45), and 'Second' (31) spinners. 'Operating Mode' is set to 'Single channel'. There's an 'Image1' tab. The 'Scale' section has 'X' (0), 'Y' (0), 'Width' (640), and 'Height' (480) spinners. The 'Input Source' section shows a row of icons for different input types, with 'CV1-Audio1' and '1:CV1' selected in the adjacent columns.

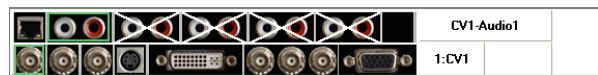
Timer Index: Timer index, currently , users can setup up to 10 timing operation in the schedule.

Date Settings: The date timing play appoint.



Time: The time timing play appoint.

Operating Mode: User can choose single or dual channels.

Scale: User can set the image ratio and position for Image 1 and Image 2 (Dual channels).



Automatic play signal source selection.

5. Click set icon  to save after setting.
6. If need to get certain timing content, input the timer index, and click the get icon  to see the specific content. For example: choose timer index 2, show the interface as follows:

## 6. System Setup and Operation

How to Set up the Playlist



7. The software default "Device Schedule" function close, user should

click on icon  to realize automatically play.

## 6. System Setup and Operation

### How to Use Black Out

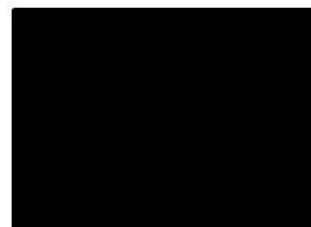
Black out description:

Black signal realizes one-key-touch to a black screen.

VSP 516S black provides effect processing when output, Black switching with fade in fade out effect. The operation is as below:

Push [BLACK/0] button, and the output turns to BLACK with fade in fade out effect.

As shown below:



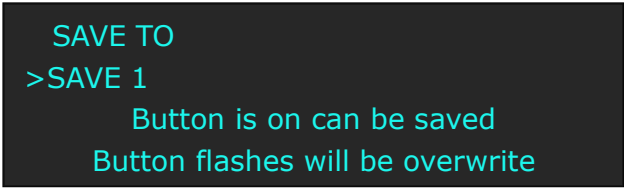
## 6. System Setup and Operation

### How to Save the Parameter

#### How to Save the Parameter

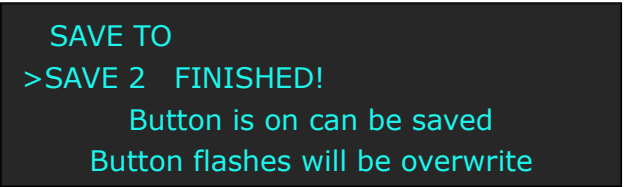
Save user mode to the customer for different scene directly call, leave out the edit operation inconvenience, VSP 516S provides ten save preferences.

1. Push the [SAVE/PIP1] button, the button light is on, and enable the SAVE function.



SAVE TO  
>SAVE 1  
Button is on can be saved  
Button flashes will be overwrite

2. Turn the knob, and choose the position that will save, push the knob to confirm.
3. The figure: 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 means SAVE1~10, user can push any button on to save. For example, save to SAVE 2, push button 2, the OLED panel will show as follows after saving.



SAVE TO  
>SAVE 2 FINISHED!  
Button is on can be saved  
Button flashes will be overwrite

User can also push the [MENU/EFFECT] button to enter to the menu items, turn the knob to choose <SAVE SETUP>, and choose “SAVE TO” to save the parameter.

4. Again push the [SAVE/PIP1] button, the button light is off, and disable the SAVE function.

## 6. System Setup and Operation

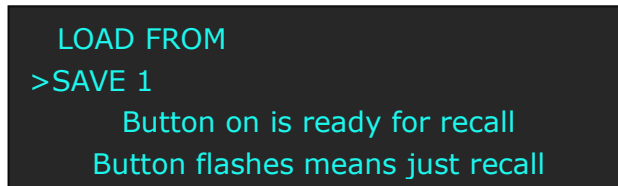
### How to Load the Saved Parameter

---

#### How to Load the Saved Parameter

Save user mode to the customer for different scene directly call, leave out the edit operation inconvenience, VSP 516S provides ten save preferences.

1. Push the [LOAD/PIP2] button, the button light is on, and enable the LOAD function.



2. Turn the knob, and choose the position that will load, push the knob to confirm.

User can also push the [MENU/EFFECT] button to enter to the menu items, turn the knob to choose <SAVE SETUP>, and choose "LOAD FROM" to load the saved parameter.

3. Push the [LOAD/PIP2] button again, the button light is off, and disable the LOAD function.

## 6. System Setup and Operation

### How to Achieve Multiple Cascade

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### How to Achieve Multiple Cascade

The working principle of VSP 516S multiple cascade is assigned the front signal to corresponding VSP 516S video processors, again synchronous external timing through processor, and wholly enlarge the picture and intercept corresponding display area according to the corresponding control area to achieve the function of integral display a complete picture, through the central control or computer, it can realize the synchronous broadcasting and at the same time seamless switching.

Here, we will illustrate the operation. For example, the LED display is  $2400 * 1024$ , and now we will cascade with 2 pieces of VSP 516S, specific steps are as follows:

#### 1. Connection and Setting

- (1) Connect the DVI signal to DVI interface of the two VSP 516S through DVI distributor (DXP 0108).
- (2) Divide the LED display into two parts, respectively for  $1152*1024$  and  $1248*1024$ , and connect the DVI output interface of the two VSP 516S to two sending cards.
- (3) Choose DVI input signal for the two VSP 516S, and set both the VSP 516S output resolution for  $1280 * 1024$ .

#### 2. Multiple Cascade

- (1) Push the [SCALE/CROP] button of the first VSP 516S, and scale the screen to the actual points.  
Choose <H SIZE> in menu option, and set the width as 1152 by the knob or number button, push the knob to confirm.  
Turn the knob, and choose <V SIZE> in menu option, and set the height as 1024 by the knob or number button, push the knob to confirm. If input the wrong value, push [MENU/EFFECT] button to exit.  
The same method, set the width and height of the second VSP 516S



## 6. System Setup and Operation

### How to Achieve Multiple Cascade

as 1248\*1024.

- (2) Push the [SCALE/CROP] button of the first VSP 516S, and choose [SPLIT], turn the knob and choose <SPLIT>, push the knob to confirm, then turn the knob and choose [ON] to enable the SPLIT function. Set the following items by knob or number button, (The operations are same with [SCALE]).

Set [H TOTAL] as 2400 (The total width points of the two screens).

Set [V TOTAL] as 1024 (Horizontal split, so the height is unchanged).

Set [H SIZE] as 1152 ( The screen width of VSP 516S).

Set [V SIZE] as 1024 (The screen height of VSP 516S).

Set [H POS] as 0 (The horizontal position of VSP 516S).

Set [V POS] as 0 (The vertical position of VSP 516S).

- (3) The same method, enable the [SPLIT] function for the second VSP 516S.

Set the following values by knob or number button (The operations are same with [SCALE]).

Set [H TOTAL] as 2400 (The total width points of the two screens).

Set [V TOTAL] as 1024 (Horizontal split, so the height is unchanged).

Set [H SIZE] as 1248 ( The screen width of VSP 516S).

Set [V SIZE] as 1024 (The screen height of VSP 516S).

Set [H POS] for 1152 (The horizontal position of VSP 516S, that is the screen width of the first VSP 516S).

Set the vertical position [V POS] for (The vertical position of VSP 516S, that is horizontal split, so the vertical value is unchanged).

### 3. Save

Push the [SAVE/PIP1] button, the key lights, start the SAVE function.

Select the location that need to save, push the corresponding button, such as save to SAVE1, push [CV1/1] button can complete

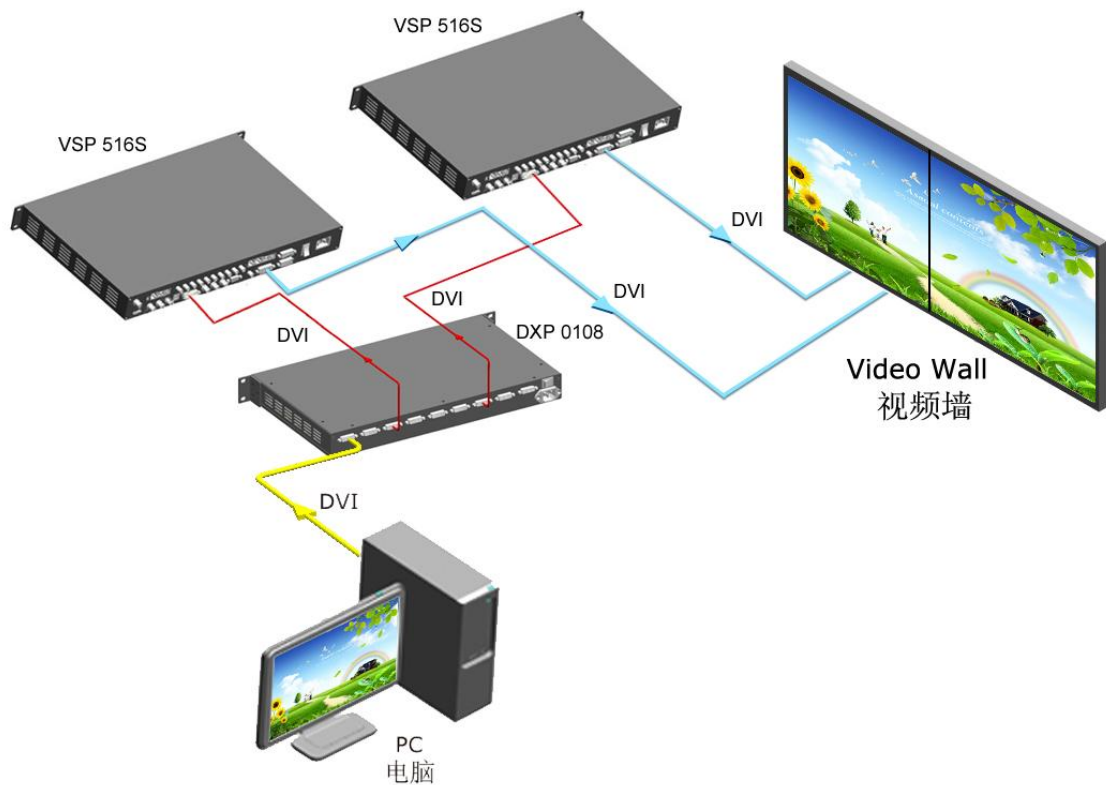
## 6. System Setup and Operation

### How to Achieve Multiple Cascade

parameter preservation.

It is automatically load SAVE1, if save to other channel, please push the [LOAD/PIP2] button and push corresponding button to load the saved parameter.

#### 4. Sketch



## 7. Common Questions and Solutions

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### In This Chapter

This chapter provides the common questions and solution for the video processor. The following topics are provided:

- No Output in LED Display
- Flash Point in LED Display Output
- LED Display only Shows Part of the Image
- No Display in the Second Half Part of LED Display
- Left Screen Appears Two Black Sides
- All Key Lights Light on Simultaneously
- Aliasstep or Shake When Input SDI Signal
- Spotted Image or Freeze When Switch CV Signal
- If DP Port Can Connect DVI or HDMI Signal

---

## No Output in LED Display

### **Confirm If There is Any Input Signal**

Push [MENU/EFFECT] button, and choose "INPUT" to see whether the input signal is normal, if OLED panel show "NO INPUT", it suggest there is no signal, check the front-end signal lines, and please note to do dual display or extended in computer, user can enter other format signals to view in the same operation.

### **Confirm If Signal Output**

Find a belt VGA input (best for DVI) display, connect to the corresponding output port of processor, and check whether the signal is correct on the monitor. If not display properly, please check whether there is input signal, or if input wire interface is taken tight, output wire interface is picked up tightly. If display normally, check if sending card is normally working or need to replace sending card test.

---

## Flash Point in LED Display Output

### **Confirm If Monitor Output is Normal**

Find a belt VGA input (best for DVI) display, connect to the corresponding output port of processor, and check whether the signal is correct on the monitor. If display normally shows and no flash point, please check whether DVI outlets put tight or replace to DVI line of sending card. If display flashes point, please judge if input signal, wire, and interface are normal.

---

## LED Display Only Displays Part of the Image

### **Signal Needs to Scale**

Push [SCALE/CROP] button in the processor and adjust the actual screen size of the screen, including the "H SIZE", "V SIZE", "H POS" and "V POS", push the knob to confirm.

---

## No Display in the Second Half Part of LED Display

### **Resolution is Insufficient**

Please make sure the points of the screen width and height, choose the resolution to be bigger than screen width by button [MENU/EFFECT] , and push the knob to confirm.

---

## Left Screen Appears Two Black Sides

### **Adjust DE Deviation**

This phenomenon needs to adjust the DVI output and DE migration of the processor, push the [MENU/EFFECT] button, choose "OUTPUT" and find the corresponding output name, such as "DVI1 OUT ADJUST", and find "DVI1 DE" again, make an adjustment for corresponding horizontal and vertical DE, please remember to save to the corresponding channel after setting up, save to SAVE1 by default.

---

## All Key Lights Light on Simultaneously

### **Check If Dial Switch is Normal**

Shut the power, check if the red dial switches near CV is upward. Reboot if it faces down, and reboot. The function of the red dial switched is mainly upgraded.

---

## Aliasstep or Shake When Input SDI Signal

Push [MENU/EFFECT] button and enter to the menu items, choose <INPUT>, push the knob to confirm and choose “SDI ADJUST” option, turn the knob, and choose “ANTI-ALIASSTEP”, user can get different effects by setting ANTI-ALIASSTEP STEP\_1 to STEP\_7. Generally, STEP\_1 corresponds to 1080i, and STEP\_4 is to solve the shake. If the device shake again, push [MENU/EFFECT] button for two times, and enter to the effects menu, choose “DEINTERLACE” to solve it.

---

## Spotted Image or Freeze When Switch CV Signal

### **Normal Phenomenon**

This is the normal phenomenon, user can set consistent CV input resolutions to avoid spotted image, but this is cut seamless switching, without fade in fade out effect.

---

## If DP Port Can Connect DVI or HDMI Signal

### **DP Port Can Only Connect DP Signal**

DP port can only connect DP signal, please choose graphics card with DP output port. If need 2 DVI or HDMI, you can choose HDMI to DP, SDI, VGA converter for signal switching.

## A. Specification

<b>BNC Input</b>	
Number of Inputs	3
Supported Standards	PAL/NTSC
Signal Level	1Vpp±3dB (0.7V Video+0.3v Sync ) 75 ohm
Multiplex	480i,576i
<b>S-Video Input</b>	
Number of Inputs	1
Supported Standard	PAL/NTSC
Signal Level	Y:1Vpp±3dB (0.7V Video+0.3v Sync ) 75 ohm U/V:0.7Vpp±3dB 75ohm
Multiplex	480i,576i
<b>YPbPr BNC Input</b>	
Number of Inputs	BNC*3
Supported Standard	analog signals
Signal Level	Y:1Vpp±3dB(0.7V Video+0.3v Sync )75 ohm Pb/Pr:0.7Vpp±3dB 75 ohm
Supported Resolution	480i,576i,480p,576p,720p50,1080i50,1080p50 1080i50,1080i60
<b>VGA DB15 Input</b>	
Number of Inputs	1
Connector	Standard DB15 Socket
Supported Standard	VGA-UXGA
Signal Level	R、G、B、Hsync、Vsync:0 to1Vpp±3dB (0.7V Video+0.3v Sync ) 75 ohm black level: 300mV Sync-tip: 0V
Supported Resolution	1024×768×60, 800×600×60, 640×480×60, 1280×720×60, 1280×800×60, 1280×960×60, 1280×1024×60, 1440×900×60, 1400×1050×60, 1600×1200×60, 1680×1050×60, 1920×1080×60, 1366×768×60
<b>DVI Input</b>	
Number of Outputs	1
Connector	Standard DVI-I socket
Supported Resolution	SMPTE: 625/25 PAL, 525/29.97 NTSC, 625/50p PAL, 525/59.94p NTSC 720p50,720p59.94/60,1080i50,1080i59.94/60 VESA: 800×600×60Hz, 1024×768×60Hz, 1280×768×60Hz, 1280×1024×60Hz, 1600×1200×60Hz, 1920×1080×60Hz,



	1920×1080×50Hz
Signal Level	TMDS pwl, single pixel input, 165MHz bandwidth
Format Standard	HDMI 1.3
<b>DP (Displayport) Input</b>	
Number of Inputs	1
Connector	Standard
Supported Resolution	Support resolution: WQXGA + (1920 x 1200), and color depth: 30/36 bit (each primary 10/12 bit)
Supported Bandwidth	10.8Gb/s
Format Standard	DP1.1
<b>3G-SDI Input</b>	
Number of Inputs	1
Connector	BNC
Supported Standard	SMPTE 259M SD-SDI 270 Mbit/s 480i, 576i SMPTE 292M HD-SDI 1.485 Gbit/s 720p, 1080i SMPTE 424M 3G-SDI 2.970 Gbit/s 1080p
Balance	Belden 1694A 100m self-adaptive 3G, 200m self-adaptive 1.485G, 350m self-adaptive 270Mbps
<b>Audio Input</b>	
Number of Inputs	10
Connector	Standard RCA Socket
Audio Standard	48Kbps 24bit
<b>DVI Output</b>	
Number of Outputs	2
Connector	Standard DVI-I Socket
Signal Level	TMDS pw, 165MHz bandwidth
Supported Resolution	VESA: 800×600×60Hz, 1024×768×60Hz, 1024×768×75Hz, 1280×720×60Hz, 1280×720×50Hz, 1280×768×60Hz, 1280×800×60Hz, 1280×1024×60Hz, 1360×768×60Hz, 1366×768×60Hz, 1400×1050×60Hz, 1440×900×60Hz, 1600×1200×60Hz, 1680×1050×60Hz, 1920×1080×60Hz, 1920×1080×50Hz, 1920×1200×60Hz, 2048×1152×60Hz, 2560×812×60Hz, 2560×816×60Hz
<b>VGA Output</b>	
Number of Outputs	1
Connector	Standard DB15 Socket
Supported Resolution	VESA: 800×600×60Hz, 1024×768×60Hz, 1024×768×75Hz, 1280×720×60Hz, 1280×720×50Hz, 1280×768×60Hz, 1280×800×60Hz, 1280×1024×60Hz,

	1360×768×60Hz, 1400×1050×60Hz, 1600×1200×60Hz, 1920×1080×60Hz, 1920×1200×60Hz, 2560×812×60Hz,	1366×768×60Hz, 1440×900×60Hz, 1680×1050×60Hz, 1920×1080×50Hz, 2048×1152×60Hz, 2560×816×60Hz
Signal Level	R、G、B、Hsync、Vsync:0 to1Vpp±3dB (0.7V Video+0.3v Sync ) 75 ohm black level: 300mV Sync-tip: 0V	
Audio Output		
Number of Outputs	1	
Connector	Card faucet , Standard 1/4 Socket	
Audio standard	48Kbps 24bit	
Function		
Input channel configuration	Support each input channel signal programming configuration	
PIP	Support PIP、PBP for any two inputs	
Audio sync switch	support	
Extras		
Communication	RS232 USB TCP/IP	
Power Supply	85-264V 2.1A IEC-3	
Working Environment	0°C~45°C	
Stored Environment	10% to 90%	
Product Warranty	3-year parts and labor warranty	

## B. Software Upgrade

---

### USB Upgrade

#### 1. BOOT Upgrade

Connect the device and computer via the serial port, and upgrade with FLASH MAGIC software, the form of the file is “.hex”.

(1) Connect the device and computer with the RJ11 cable.



RJ11

(2) Take the two coding switch to “ON” position as below:



(3) Plug in the power cord, and make sure the device is in normal operation.

(4) Open the programming software, and enter “Flash Magic” interface.

(5) Choose the corresponding serial port, set the baud rate to 115200, choose LPC2368 and load the object files (hex file) of BOOT update program.

(6) Click START button.

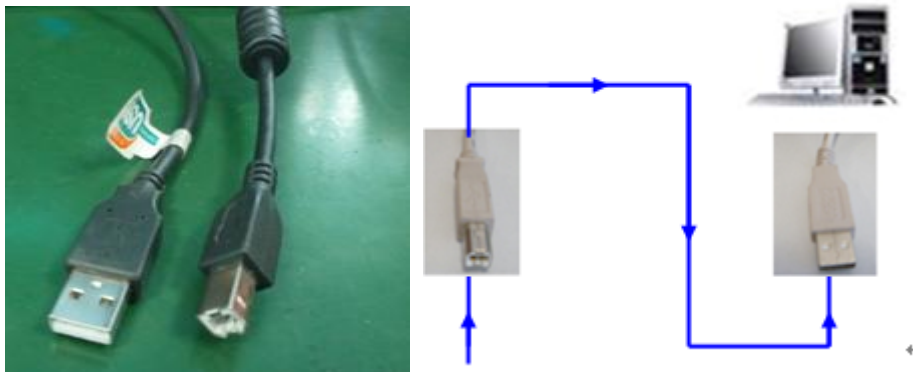
(7) Exit the program, turn off the power, take the two coding switch back, as below restart the equipment power, check if the equipment work normally.



## 2. Communication Firmware Upgrade

Upgrade by copy the file, the form of the file is: .MCU, and upgrade steps are as follows:

(1) Connect the USB interface of VSP516S to the computer with a USB cable.



(2) Plug in the power cord, and make sure the device is in normal operation.

(3) Push MENU button, and enter [USB UPDATE] option, operation steps are:

MENU→SYSTEM→USB UPDATE→SEL.

(4) Open the USB drive that plug into the computer, and delete the "firmware. bin" file in the USB drive, then copy the MCU file of VSP516S to the USB drive, program loading is complete after the file has been copied.

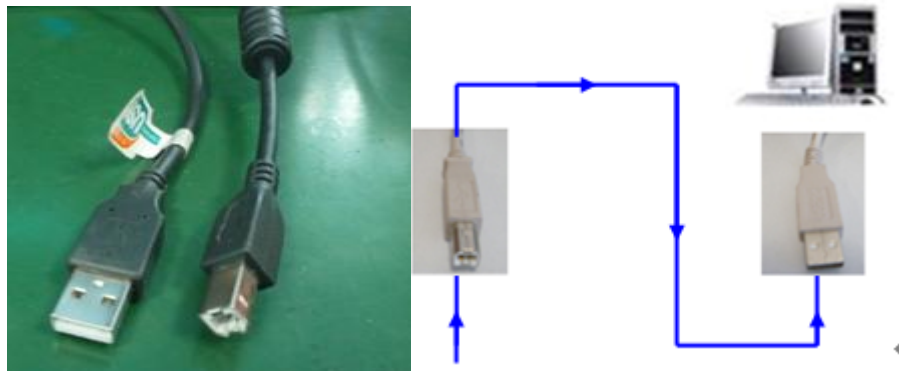
(5) Reboot the device, and enter the menu to check if the version is right, factory reset is completed.

Operation steps are: MENU→SYSTEM→SYSTEM INFO→MCU.VER.

## 3. CORE Panel Upgrade

**Method 1:** Upgrade by copy the file, the name of the file is: VIDEO.fvb, and upgrade steps are as follows:

(1) Connect the USB interface of VSP 516S to the computer with a USB cable.



(2) Plug in the power cord, and make sure the device is in normal operation.

(3) Push MENU button, and enter [USB UPDATE] option, operation steps are:

MENU→SYSTEM→USB UPDATE→SEL.

(4) Open the USB drive that plug into the computer, and delete the "firmware. bin" file in the USB drive, then copy the MCU file "VIDEO.fvb" of VSP516S to the USB, program loading is complete after the file has been copied.

(5) Reboot the device, and enter the menu to check if the version is right, factory reset is completed. Operation steps are: MENU→SYSTEM→SYSTEM INFO→VIDEO VER.

**Method 2:** Upgrade by copy the file, the name of the file is: VIDEO.fvb, and upgrade steps are as follows:

1. Connect VSP 516S and computer with cable.

2. Start the network function, specific steps are as follows:

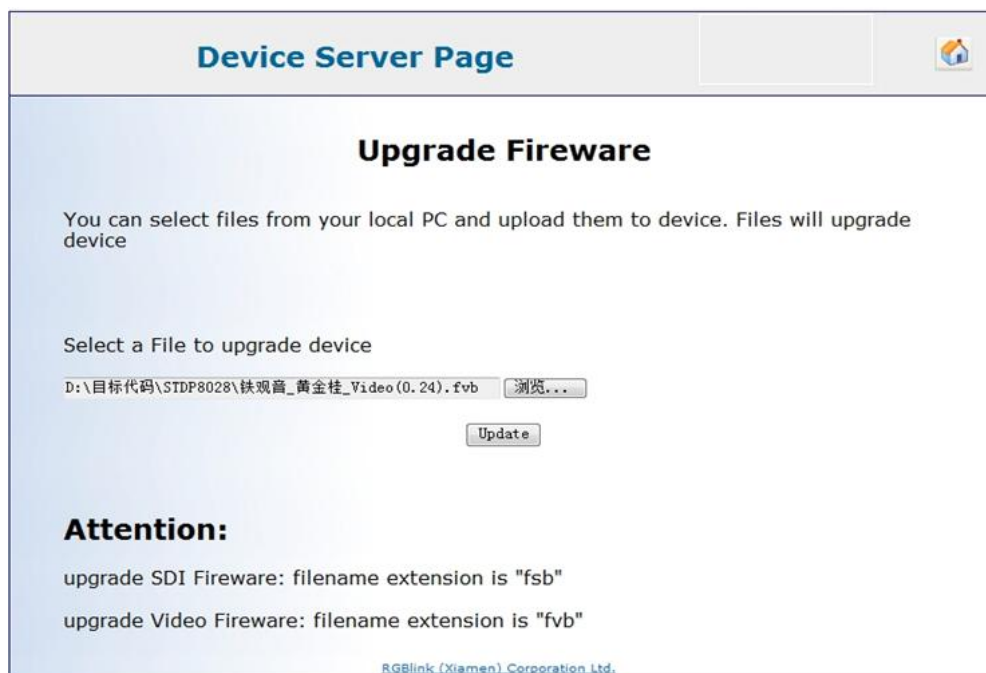
MENU--SYSTEM -- ETHERNET -- NETWORK, select ON, and check the IP address of the equipment, confirm if it is consistent with the computer, such as 192.168.0.\*\*\*, take 192.168.0.100 for example.

3. Open the webpage, input IP: 192.168.0.100 (this is the default state, if the IP address is changed, the IP address input should be consistent with the changed IP address), then input the user name: admin, password: rgblink123, click OK.

4. Enter the webpage, click "Fireware Upgrade" and load the page, as shown:



5. Click "Browse...", choose fireware directory path, the format should be "FVB", then select "Update" to load the program.



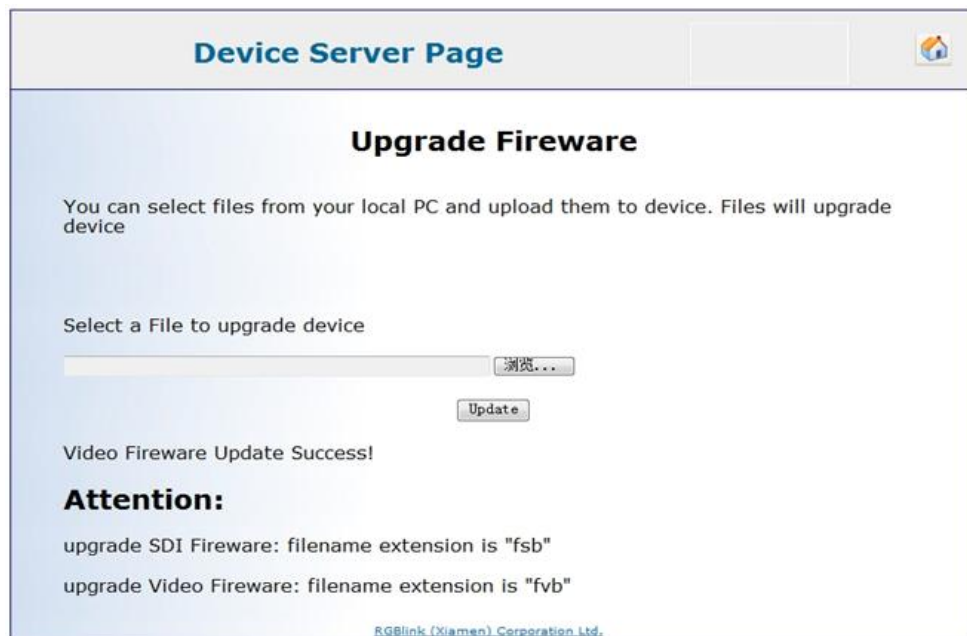
6. If display "UPDATE FIREWARE..." in the device's OLED panel, it means it's in loading program status.



7. If display "UPDATE SUCCESS! PLEASE RESTART!"



Or display "Video Fireware Update Success!" on webpage, it means the program is loaded successfully, otherwise, it needs to reload.



8. Reboot the device and check the running state, then finish the fireware upgrade.

---

## How to Install the SDI Optional Module

The VSP 516S can be modified to install or remove optional module that change the input and/or output formats that the processor can process. We will introduce “How to Install the SDI Optional Module” in the following parts, specific steps are as follows:

1. Take Apart the VSP 516S
2. Install the SDI Optional Module
3. Assemble the VSP 516S

### Part 1: Take Apart the VSP 516S

Specific steps are as follows:

1. Disconnect the AC power cord from the VSP 516S to remove power from the unit.

**Warning:** To prevent electric shock, always unplug the VSP 516S from the AC power source before opening the enclosure.

2. Disconnect all signal and control cables.
3. Remove the 7 screws on the top cover (Figure 1).



(Figure 1)

4. Remove all the screws on the back panel (Figure 2).





(Figure 2)

5. Lift the top cover and back panel.

**Caution:** Do not touch any electronic components inside the VSP 516S. Doing so could damage the processor. Electrostatic discharge (ESD) can damage IC chips even though you cannot feel it. You must be electrically grounded before proceeding with maintenance. A grounding wrist strap is recommended.

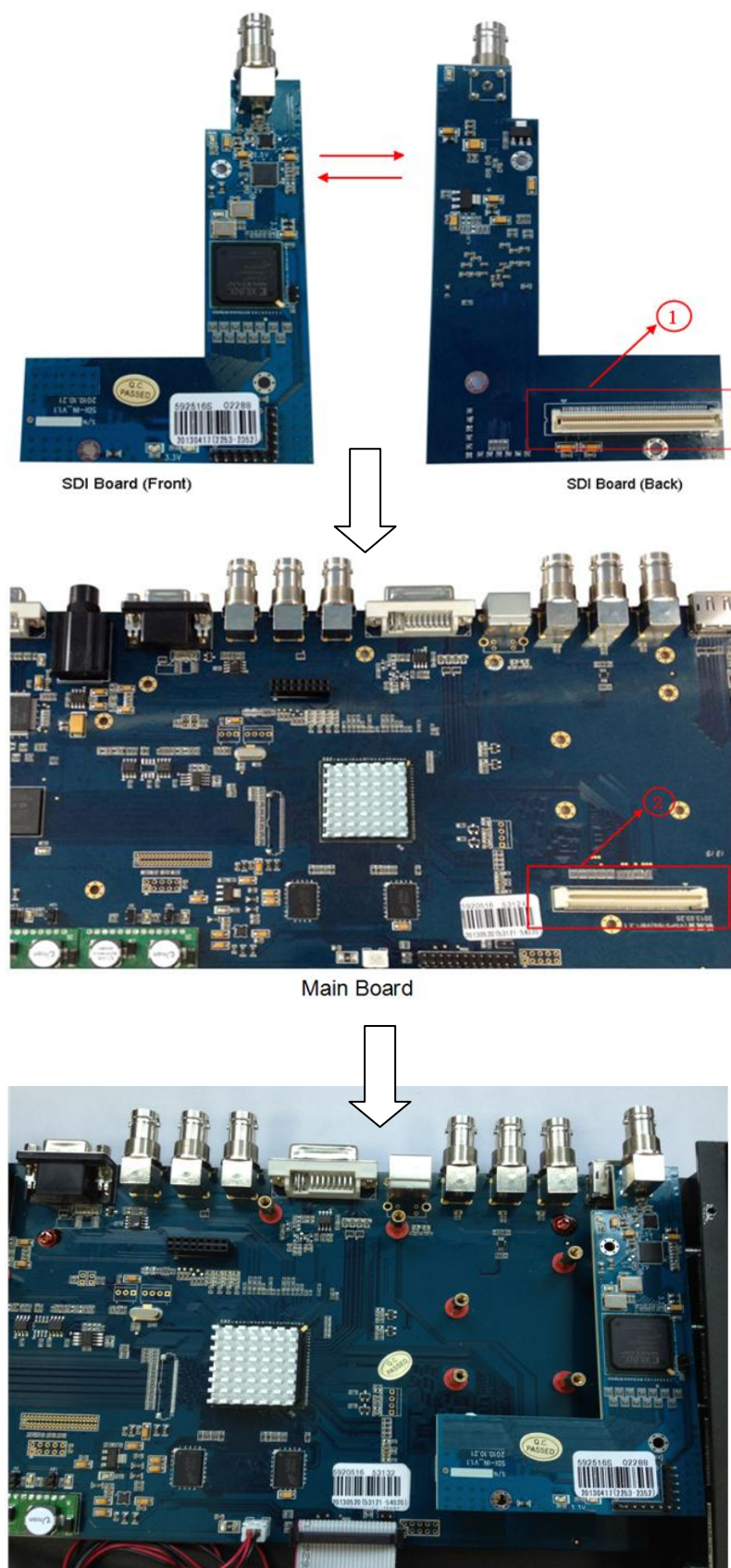
6. Perform the desired maintenance procedure. See “Install the SDI Optional Module” in Part 2.

## Part 2: Install the SDI Optional Module

Install the SDI optional Module in the VSP 516S as follows:

**Warning:** Changes to electronic components must be performed by authorized service personnel only.

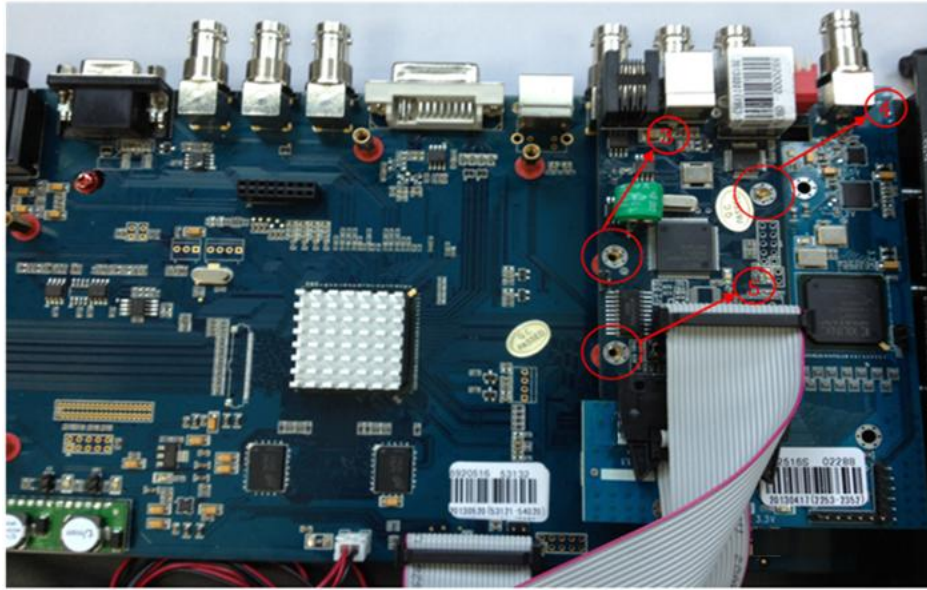
1. Open the processor. See “Take Apart the VSP 516S” in Part 1.
2. On the main board port 2, locate SDI input board port 1, align and gently apply pressure to mate input board with main board, as shown in Figure 3.



(Figure 3)

3. Locate the Gigabit network board port 3, 4, 5 into the main board, tighten

the screws, as shown in Figure 4.



(Figure 4)

4. Close and reinstall the processor, see “Closing the Processor” in Part 3.

### **Part 3: Assemble the VSP 516S**

Specific steps are as follows:

1. Secure the back panel with the screws.
2. Replace the top cover on the VSP 516S.
3. Fasten it with the screw that were removed in “Opening the Processor” part.
4. If desired, reconnect all cables.